Power Mac News: What Hinders Performance? Page 49

JULY 1994

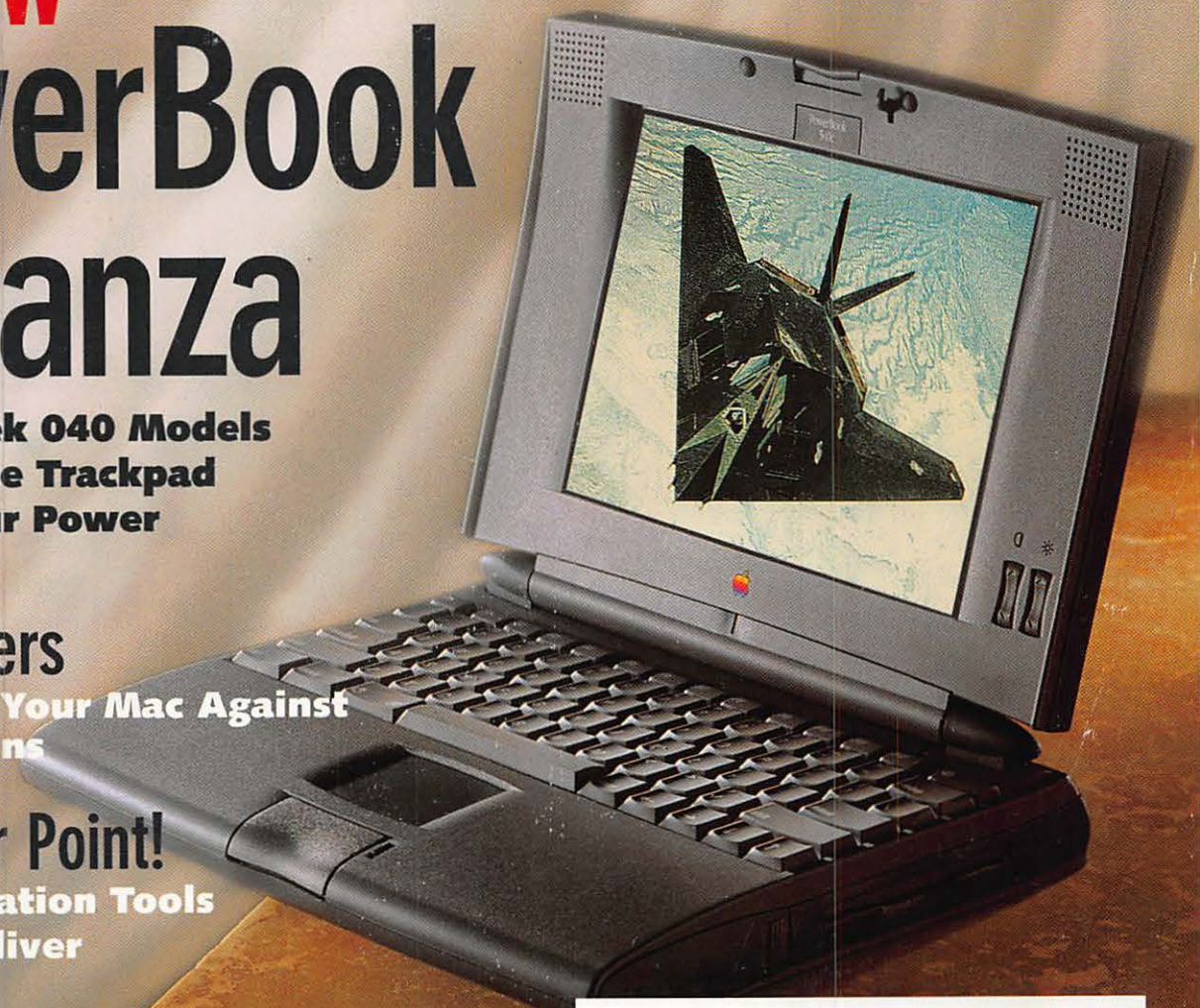
Macworld

THE MACINTOSH® MAGAZINE

$3.95 Canada $4.95

New PowerBook Bonanza

- 6 Sleek 040 Models
- Unique Trackpad
- 4-Hour Power



Virus Slayers

Protect Your Mac Against 52 Strains

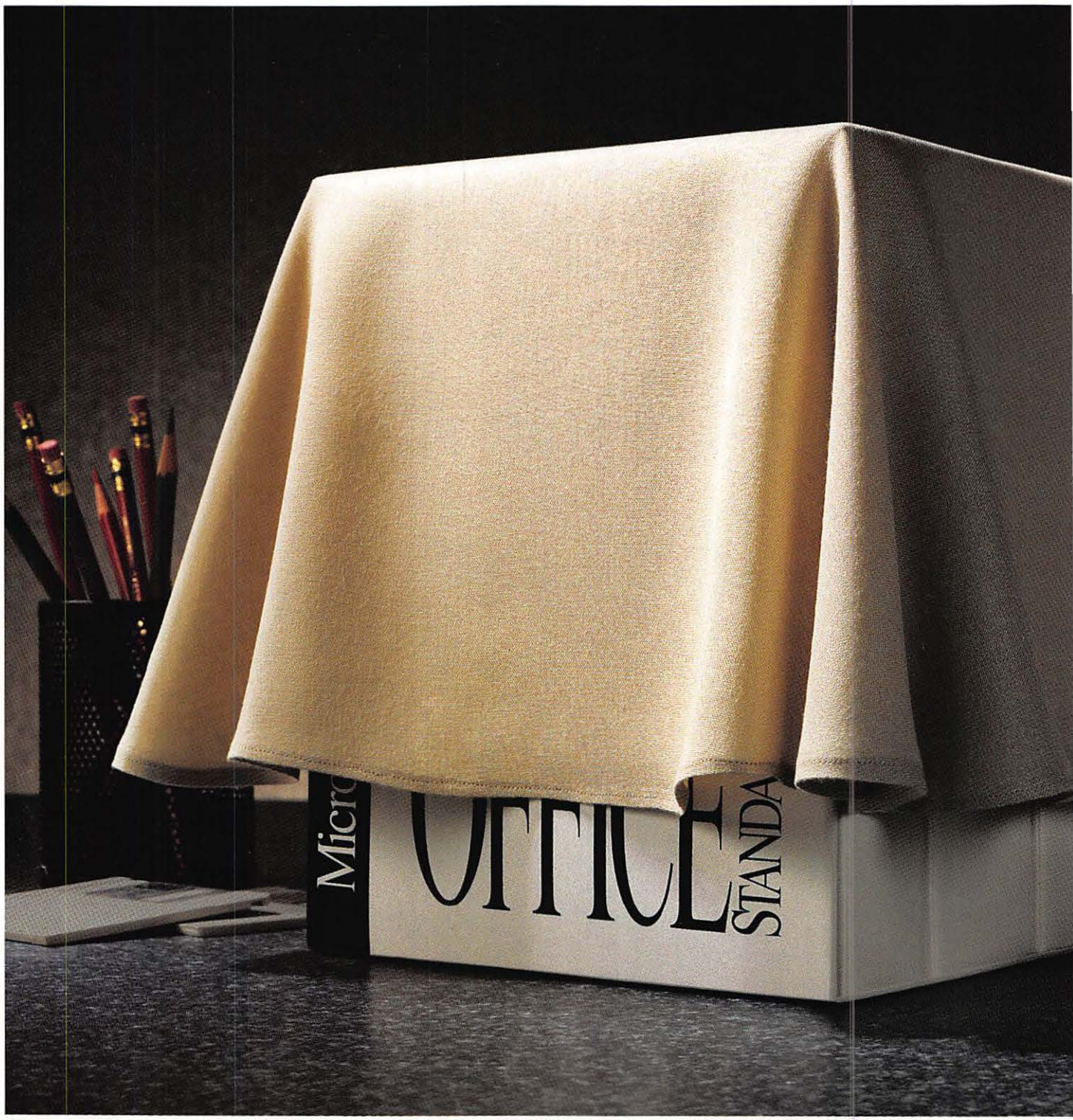
Make Your Point!

Presentation Tools that Deliver

Ultrarealistic Color Printers

10 Contenders Vie for Editors' Choice

POWER MACINTOSH RUNS FAST WIT
IN STOCK. JUST WAIT TILL YOU SEE IT



*Offer good only in the 50 United States and Canada. Offer good for purchases after April 1, 1994, and freight charges do apply. © 1994 Microsoft Corporation. All rights reserved. For more information inside the 50 United States, call (800) 434-3976. In subsidiary or (206) 936-8661. Microsoft and PowerPoint are registered trademarks of Microsoft Corporation. Macintosh is a registered trademark and Power Macintosh is a trademark of Apple Computer, Inc.

H THE MICROSOFT PROGRAMS NOW WITH OUR PERFORMANCE PACKAGE.



While it's true that the Power Macintosh™ will zip right along with current programs, it'll perform even better with the next version of Microsoft® Office for the Macintosh.®

The programs in the Microsoft Office will not only take advantage of the power and speed of Power Macintosh, they'll also work together. Seamlessly. Effortlessly.

In other words, you'll have a suite of full-featured business programs so well integrated that they act as if they were one program.

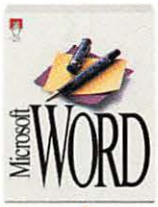
But it doesn't stop there. These programs have built-in intelligence that senses what you want to do and helps you do it.

Isn't this something you want?

If so, you really should consider Microsoft Office. Far and away, it's the best way to get the most out of the new Power Macintosh.

But we warn you, you'd better fasten your seat belt.

*Pick up Microsoft Office for Macintosh now. And we'll send you the new version for Macintosh or Power Macintosh at no charge when they ship in the near future.**



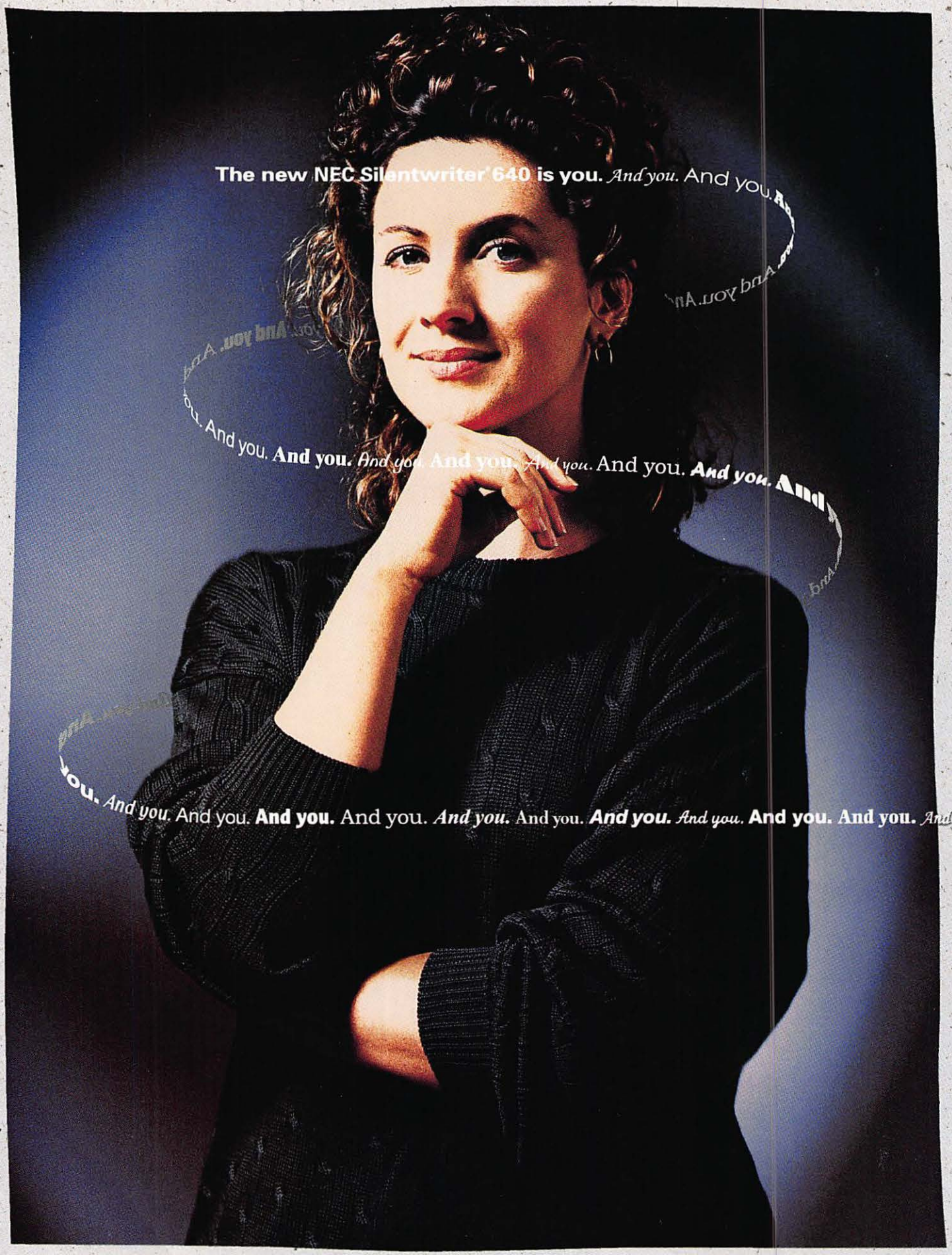






Microsoft

Canada, call (800) 563-9048. Outside the U.S. and Canada, call your local Microsoft



Silentwriter is a registered trademark of NEC Corporation. All other trademarks and registered trademarks are the property of their respective holders. The Energy Star emblem does not represent EPA endorsement of any product or service. Specifications subject to change without notice. NEC GSA#GS00K91AGS5241. © 1993 NEC Technologies, Inc.

Our new personal Mac® laser printer lets you say what you want to say, exactly the way you want to say it. That's because it's a true laser printer with 300 dpi resolution, along with our patented Sharp Edge Technology and Microfine toner, for crisper characters and richer, darker blacks.

And because it comes with 17 resident Adobe™ Type 1 fonts, 35 professional TrueType™ fonts, and built-in TrueType and Type 1 rasterizers.

It's loaded in other ways, as well. It has Adobe PostScript™ Level 2, so it works beautifully with any application. NEC's 6ppm print engine. 3 MB of standard RAM. And an AppleTalk® interface, for quick and easy connectivity with one or several Macs.

It also gives you what no one else does: a 2-year limited warranty that will get you a replacement printer *overnight,* if anything goes wrong. All for about $800.

For more information, call 1-800-NEC-INFO. Or, for information via fax, 1-800-366-0476, and request document #79640. Thank you. And you. And you.

nd you. And you. **And you.** ***And you.*** And you. ***And you.*** And you. **And you.** *And you.* **And you.** ***And you.*** *And you.*



POSTSCRIPT Software From Adobe

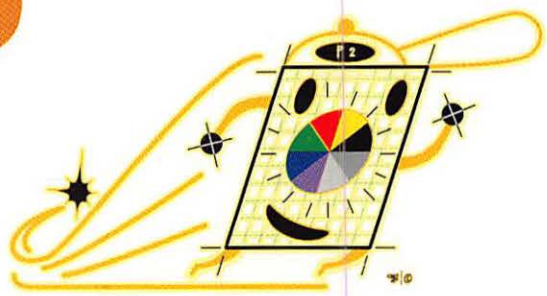
energy star EPA POLLUTION PREVENTER

NEC

Circle 25 on reader service card

Contents

MACWORLD THE MACINTOSH® MAGAZINE JULY 1994



Features

96 PowerBooks: The Next Generation

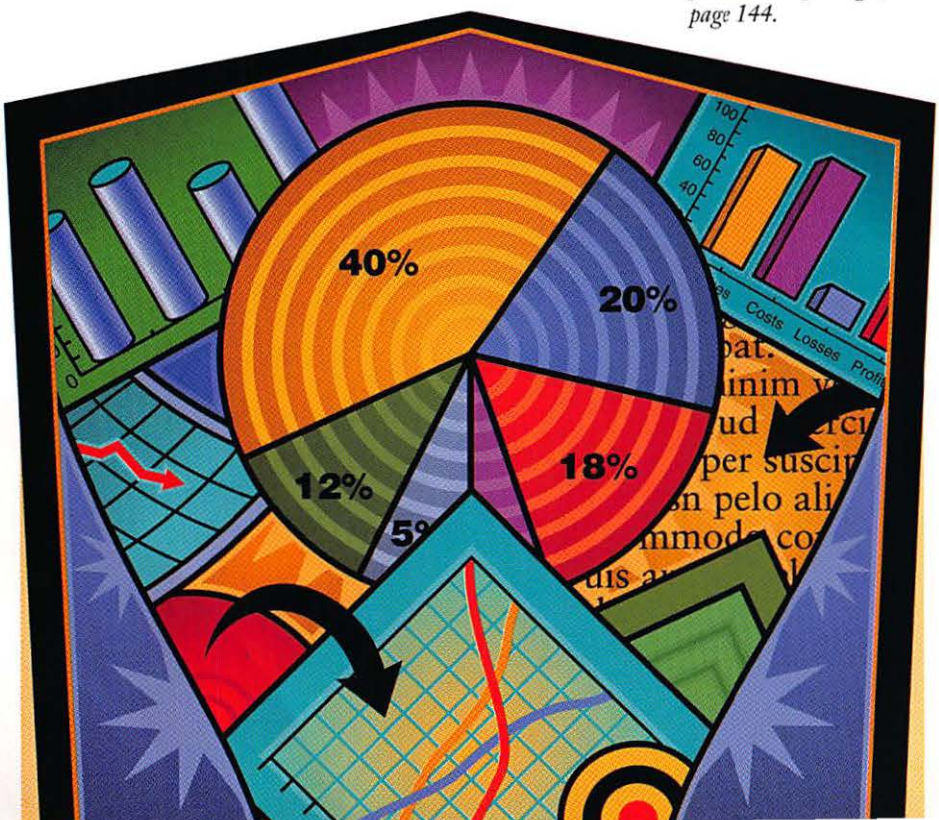
MW LAB BY CARY LU The new PowerBooks have more going for them than just speed—Macworld Lab uncovers a bigger display, better batteries and sound, plus PowerPC options.

106 Photo-realistic Color Printers

MW LAB BY JIM HEID Macworld Lab puts ten dye-sublimation printers through their paces to show that beautiful, professional color output costs less than you might think.

116 Virus Killers

MW LAB BY BRUCE SCHNEIER Will your Mac survive a viral onslaught? Macworld Lab tests the protective powers of the top four programs.



The top seven presentation packages, page 144.

News

39 MacBulletin

40 News Software industry's merger explosion • HP's 12-ppm, 600-dpi workgroup printer • Tech support gets costlier, and more

49 Power Mac News Power Mac SCSI, NuBus slowdown reported • Native applications multiply

51 New Products

Opinion

25 State of the Mac

BY ADRIAN MELLO Apple makes the honor roll.

31 Letters

175 The Desktop Critic

BY DAVID POGUE Free (and nearly free) shareware greats.

179 The Iconoclast

BY STEVEN LEVY Warm, fuzzy . . . Internet?!

183 Conspicuous Consumer

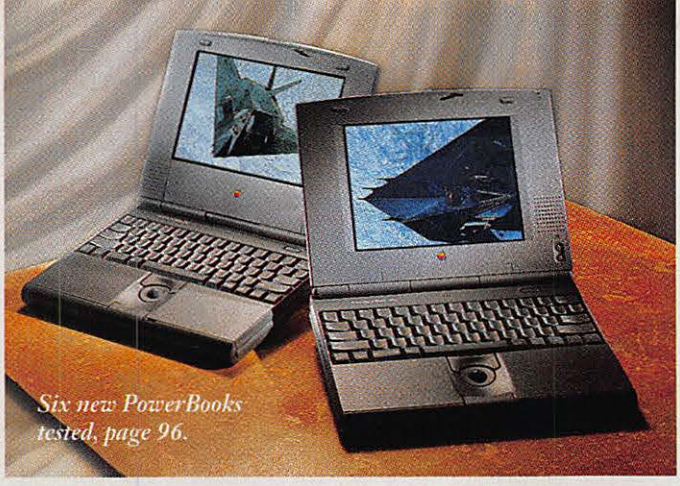
BY DEBORAH BRANSCUM Our fifth annual guide to the best Mac resources.

274 Wise Guy

BY GUY KAWASAKI Roadblocks along the information superhighway.



We test ten dye-sublimation printers, page 106.



Six new PowerBooks tested, page 96.

Graphics

122 News Fonts and images 24 hours a day • Trapping made easier • Drum-quality scanning under $13,000, and more

126 Expert Graphics
BY CATHY ABES Graphics professionals share their secrets.

130 Inside PostScript Level 2
BY KRISTI COALE With features like smoother halftones, faxing, and better memory allocation, Level 2 should make a big splash, but color promises remain elusive.



At Work

136 News PowerPoint 4.0 gets a face-lift • Sales and operations software in one • WordPerfect's document distributor, and more

139 Working Smart
BY JIM HEID When time is money, you need time-billing software.

144 Presentation Software That Delivers
BY DEKE McCLELLAND We scrutinize the top seven presentation packages to see which will put you and your ideas in the best possible light.

151 Quick Tips
BY LON POOLE Tips, tricks, and shortcuts.

Networks

158 News NetWare coming to PowerPC • Streamlined ARA servers • AppleShare 4.0 on 030s, and more

160 Solving Network Mysteries
BY JOEL SNYDER Our network sleuth uncovers the best protocol analyzers.

165 PowerBook Notes
BY CARY LU Bargain software for your PowerBook.

Buyers' Tools

187 Editors' Choice
Top picks from our comparative articles.

193 Star Ratings
More than 300 product-review summaries.

205 Streetwise Shopper
Hardware and software bargains: discounts, bundles, upgrades.

18 How to Contact Macworld

IDG

July 1994, Volume 11, Number 7 Macworld (ISSN 0741-8647) is published monthly by Macworld Communications, Inc. Editorial and business offices: 501 Second St., San Francisco, CA 94107, 415/243-0505. Subscription orders and inquiries should be directed to 303/447-9330. Subscription rates are $30 for 12 issues, $60 for 24 issues, and $90 for 36 issues. Foreign orders must be prepaid in U.S. funds with additional postage. Add $18 per year for postage for Canada and Mexico subscribers. Add $69 per year for postage to all other countries. Second-class postage paid at San Francisco, California, and at additional mailing offices. **Postmaster:** Send address changes to *Macworld*, P.O. Box 54529, Boulder, CO 80323-4529. Printed in the U.S.A.

ON THE COVER
Photograph by Mark Johann.
Screen image by James Benson/Check Six.

Reviews

62 Collage 1.0.1
Image-compositing software

64 Apple QuickTake 100 for Macintosh
Digital camera

65 QA-350 LCD
LCD projection panel

67 microLaser Pro 600
Workgroup printer

69 Pablo 2.0.1
Database reporting tool

71 Ray Dream Designer 3.0.3
3-D illustration software

73 Ear Phone Streamline AV
Telephone/speech-recognition earpiece

75 QMS ColorScript Laser 1000
Color laser printer

77 IX-4015 Color Image Scanner
Color flatbed scanner

77 TopDown 4.0
Flowcharting program

78 WaterMark Message Central 2.0.2
Voice-mail system

83 Pointillist
Stereogram software

83 MacMoney 4.01
Personal-finance software

85 DiskTop 4.5
File-management utility

87 TurboDialer
Automatic telephone dialer

87 LabView for Mac 3.0.1
Data acquisition and analysis

89 Grolier Multimedia Encyclopedia
CD-ROM encyclopedia

89 Helix Express 2.0.1
Relational-database software

91 VirtualDisk 1.1a
Disk-cataloging software

91 Automap Road Atlas for Macintosh 2.01
Mapping software

93 Financial Competence 1.5
Accounting tutorial

93 Small Blue Planet 1.2.1
Educational CD-ROM



It's time to stop

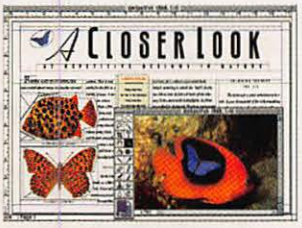
intel inside

You've reached a crossroads in computer technology. A point where choosing between a PowerPC* or a Pentium™ processor-based PC could be a difficult decision.

The PC is not what it used to be. Everything you want to do on a Macintosh,* you can just as easily do on a PC. And now, all of the most popular Mac applications are available for PCs, including those by Aldus, Microsoft, Adobe, Quark and Broderbund.



This is a document created on an Intel-based PC.

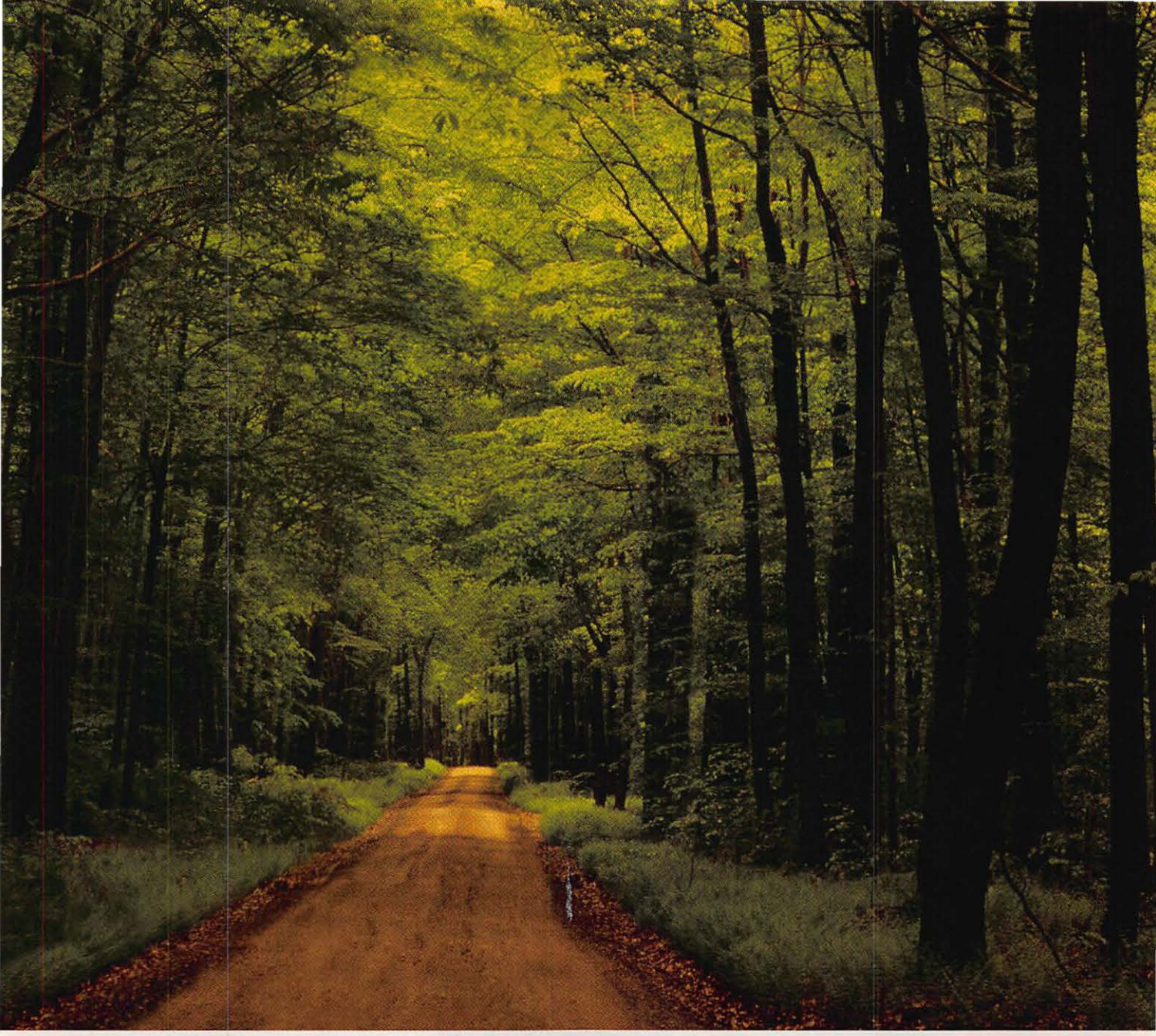


This is a document created on a Macintosh.

With Windows,* they're just as easy to use.

And they run at incredible speeds. To put it in

© 1994 Intel Corporation. *Other brands and names are property of their respective owners.



and ask directions.

perspective, Intel486™ DX2 processor-based PCs outperform the Mac Quadra* 840av, and Pentium processor-based PCs are even faster.

Best of all, you have a choice of over 100 computer vendors who now offer Pentium processor-based PCs.

These PCs give you access to some of the world's most innovative technologies. Like ProShare™ document and video conferencing. Video software using the Indeo™ format. Even future performance upgrades with the OverDrive™ processor technology.

So before you buy another Mac, stop and ask some questions. Find out where Apple is going, especially with the PowerPC. Then ask Intel about the Pentium processor. What you find out might put you on a whole new path.

To learn more about the Pentium processor and other innovative technologies, call 1-800-395-7009, Ext. 111.

intel®

As far as Apple is concerned, only one table can support the family.

MacUser, June 90

Apple® calls it "The perfect place to put your computer to work." It's sturdy, ergonomic and carefully designed around Apple's modular footprint to fit the Mac family *plus* peripherals. Call today for a free catalog of our complete line.

MacTable®

☎ 800-722-6263
or 206-481-5434 in WA state



ScanCo

P.O. Box 3217, Redmond, WA 98073-3217

MacTable design is patent pending.
MacTable is a trademark of Scandinavian Computer Furniture, Inc. Apple is a trademark of Apple Computer, Inc.

"The Best Mac Desk Ever."

NEW!

AS LOW AS $249



- Ergonomic
- Fully Adjustable
- Strong
- Guaranteed
- VAR Inquiries Welcome

agio™
BEAVERTON, OREGON

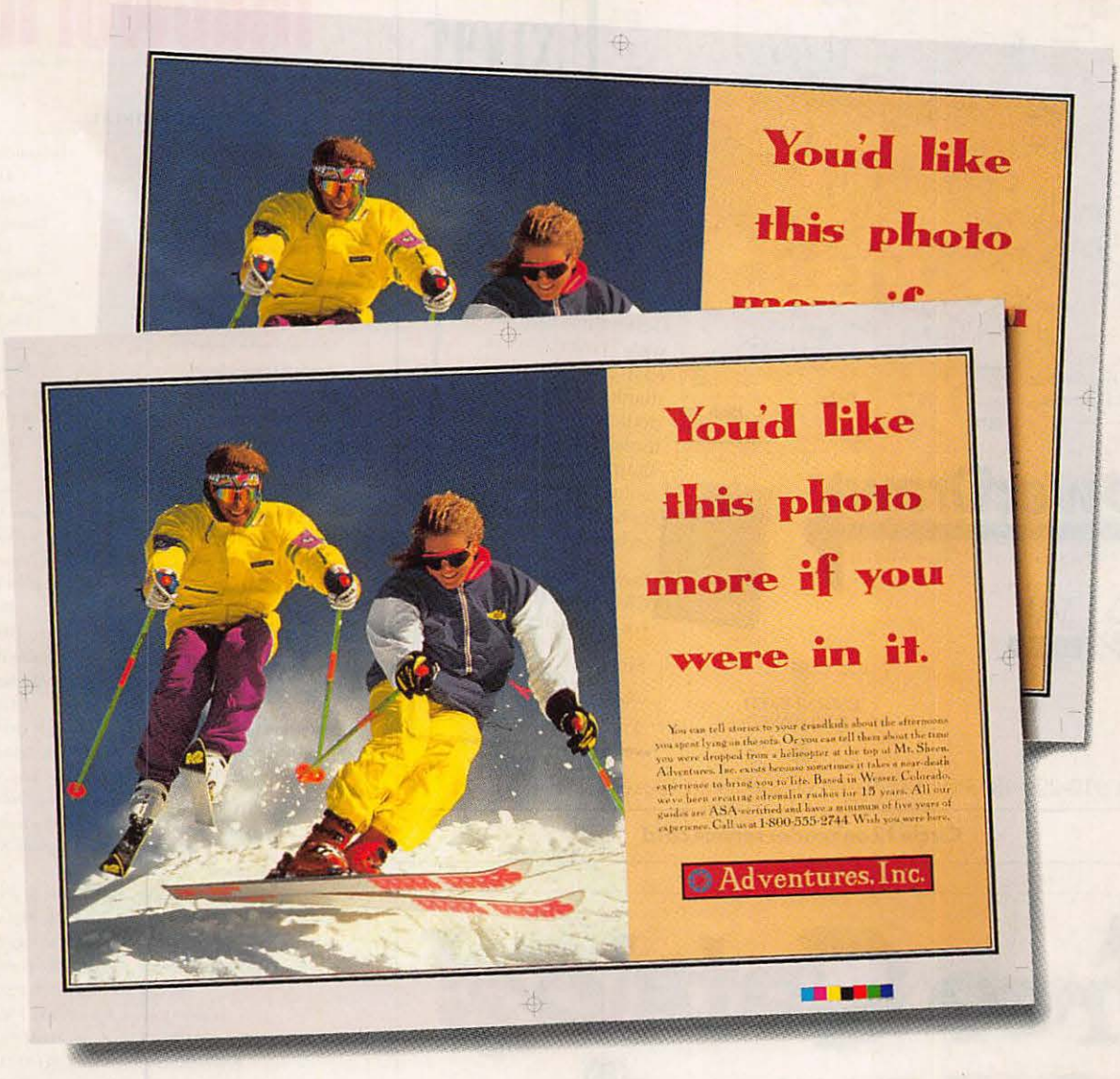
Free Catalog! 800.688.2446

| Phone 503. 690.1400 | FAX 503. 690.1423 | Europe 011.41.62.631026 | Japan 011.81.3.3583.0436 | ups

Macworld

PRESIDENT/CEO AND PUBLISHER MACWORLD COMMUNICATIONS, INC.	James E. Martin
CHIEF OPERATING OFFICER MACWORLD MAGAZINE	Colin Crawford
ASSISTANT TO THE PRESIDENT AND COO	Yuen Yeh
DIRECTOR OF FINANCE	Vicki Peilen
DIRECTOR OF HUMAN RESOURCES	Shelly Ginenthal
DIRECTOR OF CORPORATE INFORMATION SYSTEMS	Walter J. Clegg
INFORMATION SYSTEMS MANAGER	Rick Valdez
CORPORATE BUSINESS MANAGER	Christina W. Spence
ACCOUNTING/OPERATIONS MANAGER	Pat Murphy
ACCOUNTING/FACILITIES MANAGER	Michelle Reyes
SENIOR FINANCIAL ANALYST	Madeleine Buckingham

MACWORLD is a publication of International Data Group, the world's largest publisher of computer-related information and the leading global provider of information services on information technology. International Data Group publishes over 194 computer publications in 62 countries. Forty million people read one or more International Data Group publications each month. International Data Group's publications include: **ARGENTINA'S** Computerworld Argentina, Infoworld Argentina; **ASIA'S** Computerworld Hong Kong, PC World Hong Kong, Computerworld Southeast Asia, PC World Singapore, Computerworld Malaysia, PC World Malaysia; **AUSTRALIA'S** Computerworld Australia, Australian PC World, Australian Macworld, IDG Sources, Reseller, Network World, Mobile Business Australia; **AUSTRIA'S** Computerwelt Oesterreich, PC Test; **BELGIUM'S** Data News (CW); **BRAZIL'S** Computerworld, Game Power, Super Game, Gamepro, Mundo IBM, Mundo Unix, PC World; **BULGARIA'S** Computerworld Bulgaria, Ediworld, PC & Mac World Bulgaria, Network World Bulgaria; **CANADA'S** Direct Access, Graduate Computerworld, InfoCanada, Network World Canada; **CHILE'S** Computerworld, Informatica; **COLOMBIA'S** Computerworld Colombia; **CZECH REPUBLIC'S** Computerworld, Elektronika, PC World; **DENMARK'S** CAD/CAM WORLD, Communications World, Computerworld Danmark, LOTUS World, Macintosh Produktkatalog, Macworld Danmark, PC World Danmark, PC World Produktguide, Windows World; **ECUADOR'S** PC World; **EGYPT'S** Computerworld Middle East, PC World Middle East; **FINLAND'S** MikroPC, Tietoviikko, Tietoverkko; **FRANCE'S** Distributique, Golden Mac, InfoPC, Languages & Systems, Le Guide du Monde Informatique, Le Monde Informatique, Telecoms & Reseaux; **GERMANY'S** Computerwoche, Computerwoche Focus, Computerwoche Extra, Computerwoche Karriere, Information Management, Macwelt, Netzwelt, PC Welt, PC Woche, Publish, Unit; **GREECE'S** Infoworld, PC Games; **HUNGARY'S** Alaplap, Computerworld SZT, PC World, PC Virlag; **INDIA'S** Computers & Communications; **IRELAND'S** Computerscope (Computerworld); **ISRAEL'S** Computerworld Israel, PC World Israel; **ITALY'S** Computerworld Italia, Lotus Magazine, Macworld Italia, Networking Italia, PC World Italia; **JAPAN'S** Information Systems World, Computerworld Today, Nikkei Personal Computing (PCW), Macworld Japan, SunWorld Japan, Windows World; **KENYA'S** East African Computer News; **KOREA'S** Computerworld Korea, Macworld Korea, PC World Korea; **MEXICO'S** Compu Edicion, Compu Manufactura, Computacion/Punto de Venta, Computerworld Mexico, MacWorld, Mundo Unix, PC World, Windows; **THE NETHERLANDS'** Computable (CW), Computer! Totaal, LAN Magazine, MacWorld; **NEW ZEALAND'S** Computer Listings, Computerworld New Zealand, New Zealand PC World; **NIGERIA'S** PC World Africa; **NORWAY'S** Computerworld Norge, C/world, Lotusworld Norge, Macworld Norge, Networld, PC World Ekspress, PC World Norge, PC World's Product Guide, Publish World, Student Data, Unix World, Windowsworld, IDG Direct Response; **PANAMA'S** PC World Panama; **PERU'S** Computerworld Peru, PC World; **PEOPLE'S REPUBLIC OF CHINA'S** China Computerworld, China Infoworld, China Network World, PC World China, IDG Shenzhen's Computer News Digest, Electronics International, IDG HIGH TECH Beijing's New Product World; **PHILIPPINES'** Computerworld, PC World; **POLAND'S** Computerworld Poland, PC World/Komputer; **PORTUGAL'S** Cerebro/PC World, Correio Informatico/Computerworld, MacIn; **ROMANIA'S** PC World, Computerworld; **RUSSIA'S** Computerworld-Moscow, Mir-PC, Sety; **SLOVENIA'S** Monitor Magazine; **SOUTH AFRICA'S** Computing S.A., Network World S.A., Computer Mail; **SPAIN'S** Amiga World, Computerworld Espana, Communicaciones World, Macworld Espana, NextWorld, PC World Espana, Publish, Sunworld, Super Juegos Magazine (GamePro); **SWEDEN'S** Attack, ComputerSweden, Corporate Computing, Lokala Natverk/LAN, Lotus World, MAC&PC, Macworld, Mikrodatorn, PC World, Publishing & Design (CAP), Datalngenjoren, Maxi Data, Windows World; **SWITZERLAND'S** Computerworld Schweiz, Macworld Schweiz, PC & Workstation, PC Katalog; **TAIWAN'S** Computerworld Taiwan, Global Computer Express, PC World Taiwan; **THAILAND'S** Thai Computerworld; **TURKEY'S** Computerworld Monitor, Macworld Turkiye, PC World Turkiye; **UKRAINE'S** Computerworld; **UNITED KINGDOM'S** Computing/Computerworld, Connexion/Network World, Lotus Magazine, Macworld, Sunworld; **UNITED STATES'** AmigaWorld, Cable in the Classroom, CD Review, CIO, Computerworld, Desktop Video World, DOS Resource Guide, Electronic Entertainment Magazine, PlayRight, Power PC World, Federal Computer Week, Federal Integrator, GamePro, IDG Books, InfoWorld, InfoWorld Direct, Laser Event, Macworld, Multimedia World, Network World, NeXTWORLD, PC Letter, PC World, Publish, SunWorld, SWATPro, Video Event; **VENEZUELA'S** Computerworld Venezuela, Micro-Computerworld Venezuela; **VIETNAM'S** PC World Vietnam.



One of these is a color proof and one is output from our new printer. We forgot which is which.

We paid $70 and waited three days for one of these. The other popped out of our new Tektronix Phaser™ 480 in minutes. Pull out your loupe and start guessing. And while you're down there staring, note our output's phenomenal color. PANTONE®-approved, it's perfect for matching those tricky product colors, logos and skin tones. You might also notice the full 11" x 17" print area. Yes, Virginia, there are tabloid-sized full bleeds. And it shares easily: the Phaser 480 is a work group printer for Macs, PCs or workstations. Plus, it boasts a powerful RISC processor and true Adobe® PostScript™ Level 2. Spread-sized bleeds? Reprint quality comps? Pre-film proofing right at your desk? Welcome to preproduction heaven.

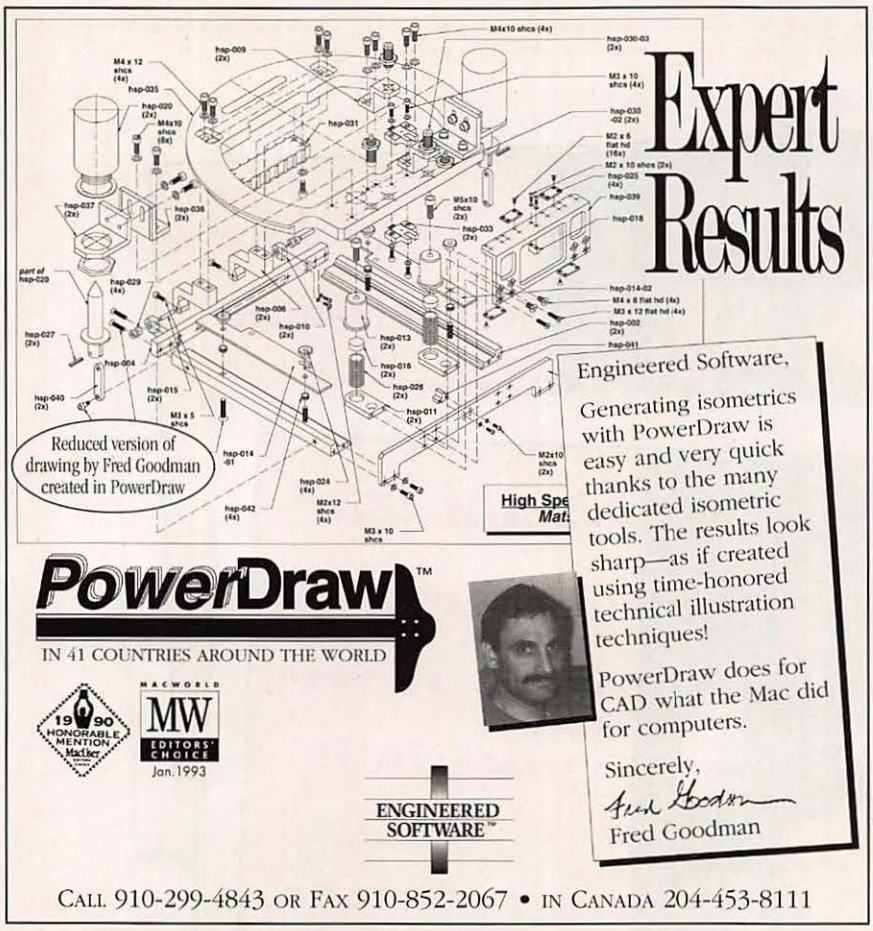
So head down to your nearest Tektronix dealer to see for yourself. And by the way, our guess is that the one on the bottom is our print. Well, then again ...



Tektronix

For a free print sample or dealer location call 800/835-6100, Dept. 32C.

Phaser is trademark of Tektronix, Inc. All other marks are trademarks or registered trademarks of their respective companies.



Circle 12 on reader service card

Free Catalog!



9964 Clip Art Images*
751 Brand Name Fonts
4255 Stock Photographs*
50 Design Tips & Tricks



Call Today! for your free catalog!

1-800-387-9193

Call, fax or write for your free Image Club Software Catalog today!

Name _____
Address _____
City _____ State _____
Zip _____ Phone _____ WOR0794

Image Club Graphics, Inc. 729 - 24th Avenue Southeast Calgary, Alberta, Canada T2G 5K8
Phone (403) 262 8008 / Fax (403) 261 7013 / Orders (800) 661 9410 / Free Catalogs (800) 387 9193
Applelink CDA0573 / Compuserve 72560,2323 / AOL imageclub / Internet imageclub@aol.com
*Catalog includes representative samples of products. ©1994 Image Club Graphics, Inc.

IMAGE CLUB

Circle 50 on reader service card

Macworld

EDITOR-IN-CHIEF Adrian Mello

EDITORIAL

EXECUTIVE EDITOR Deborah Branscum
SENIOR EDITOR/FEATURES Dan Muse
SENIOR EDITOR/REVIEWS Carol Person
LAB MANAGER Lauren L. Black
DIRECTOR OF EDITORIAL OPERATIONS Jane Lagas
SENIOR ASSOCIATE EDITOR/FEATURES Galen Gruman
SENIOR ASSOCIATE EDITOR/GRAPHICS James A. Martin
SENIOR ASSOCIATE EDITOR/FEATURES Charles Piller
ASSOCIATE EDITOR/GRAPHICS Cathy E. Abes
ASSOCIATE EDITOR/REVIEWS Marjorie Baer
ASSOCIATE EDITOR/NETWORKS Elizabeth Dougherty
ASSOCIATE EDITORS/LAB Mark Hurlow, Tim Warner
ASSOCIATE EDITOR/AT WORK Dan Littman
ASSOCIATE EDITOR/NEWS Tom Moran
ASSISTANT EDITOR Suzanne Courteau
ASSISTANT EDITOR/NEW PRODUCTS Cameron Crotty
ASSISTANT EDITOR/REVIEWS Wendy Sharp
ASSISTANT EDITORS/LAB Matthew R. Clark, Danny Lee
EDITORIAL ASSISTANTS Jim Feeley, Joanna Pearlstein
ADMINISTRATIVE ASSISTANTS Matthew Hawn, Lyn Taylor
ASSISTANT TO THE EDITOR-IN-CHIEF Susan P. Grant-Marsh
CONTRIBUTING EDITORS Robert C. Eckhardt, Erfert Fenton, Jim Heid, Guy Kawasaki, Steven Levy, Cary Lu, Deke McClelland, Tom Negrino, David Pogue, Lon Poole, Steve Roth, Charles Seiter, Suzanne Stefanac, Franklin N. Tessler
INTERNATIONAL EDITORS
Osmund Iversen, Australia, 011 61 2 439-5133;
Marianne Fajstrup, Denmark, 011 4536 44 28 00;
Michael Thevenet, France, 011 33 1 49 04 79 00;
Stephan Scherzer, Germany, 011 49 89 3 60860;
Enrico Lotti, Italy, 011 39 2 58 011660;
Osamu Honma, Japan, 011 81 3 5276-0541;
Shin Cho, Korea, 011 82 2 579-8031;
Paul Molenaar, Netherlands, 011 31 23 354554;
Toralv Ostvang, Norway, 011 472 264 7725;
Alvaro Ibariez, Spain, 011 34 1 319 4014;
Nicklas Mattsson, Sweden, 011 46 8667-9180;
Roger Bataillard, Switzerland, 011 41 1 55 1077;
Cemal Balci, Turkey, 011 90 1 279 1180;
Peter Worlock, United Kingdom, 011 4471 831-9252

COPY EDIT AND EDITORIAL PRODUCTION

MANAGING EDITOR Charles Barrett
ASSISTANT MANAGING EDITOR Ruth Henrich
EDITORIAL PRODUCTION MANAGER Jeff Sacilotto
SENIOR COPY EDITOR Katherine L. Ulrich
COPY EDITORS D. Jacqueline Kan, Paul King
PRODUCTION EDITORS Lisa Brazieal, Doreen Engelmann

ART AND DESIGN

DESIGN DIRECTOR Dennis McLeod
ART DIRECTOR Joanne Hoffman
SENIOR DESIGNER Leslie Barton
SENIOR DESIGNER/INFORMATIONAL GRAPHICS Arne Hurty
ASSOCIATE ART DIRECTOR Kent Tayenaka
ASSISTANT ART DIRECTOR Sylvia Benvenuti
DESIGNER Hae Yuon Kim
ASSOCIATE DESIGNER Tim Johnson
SENIOR DESIGN ASSOCIATE Martha Katt
DESIGN ASSOCIATE Belinda Chlouber





If they're out there drawing, you're not drawing them in. But our new Polaview™ 3000 LCD panel can help you make a few important improvements — graphically speaking.

16.7 million colors are hard to ignore

The Polaview 3000 LCD panel offers the latest in LCD projection panel technology with features certain to make people sit up and notice. Its 16.7 million colors make any chart or diagram come alive. Active matrix technology provides crisp, detailed images.

This much control can be riveting

The remote mouse is more than just point and click. It lets you enlarge images, zoom in, mask data, invert type, and time sequences. Even in different languages. Keep your audience focused with new looks all the time.

ARE AUDIENCES CREATING THEIR OWN GRAPHICS FOR YOUR PRESENTATIONS?



Wake up to full multimedia presentations

With integrated stereo sound and video, virtually anything goes. The sound is so sophisticated it can even do the talking for you. The Polaview 3000 LCD Panel is totally compatible with PC, Macintosh and video sources. And with the Polaview 1800 and 1500 LCD panels, Polaroid has a solution for every need — and budget.

From the inventors of instant imaging

Now you can change your presentation anywhere — even minutes before you present — and still make it perfect. Polaroid has always understood how valuable your time is. Whether your image is on film or on screen, we're committed to making it shine.

Get a free Polaview 3000 demo disk!
Call 1-800-662-8337 ext. 951 today!

Polaroid

Circle 119 on reader service card

Now! $50 Rebate

THE EPSON ES-800C PRO/MAC. A SCANNING SYSTEM SO ADVANCED, THERE ARE ONLY TWO WAYS TO IMPROVE IT.



We talked to the pros when we designed the EPSON ES-800C Pro/Mac to make it the most advanced professional color scanning system in its class. The 1600 dpi ES-800C comes with the full version of Adobe PhotoShop, Kai's Power Tools, one and three pass scanning, dual cpu connectivity, plus built-in color and gamma controls. It's the best equipped, best value professional scanner you can buy.

EPSON ES-800C PRO/MAC

ES-800C Scanner
Adobe Photoshop 2.5
Kai's Power Tools
SCSI cable & terminator
Two-way connectivity
Built-in Color & Gamma Controls

How do you improve on a scanner this great? By adding more free software and a $50 rebate. Now, for a limited time, buy an EPSON ES-800C Pro/Mac and you'll get a free copy of Astound, the Eddy Award-winning multi-media presentation package, a $399 value, plus a $50 scanner rebate*. That's one advanced scanner deal.

MACUSER EDITORS' CHOICE AWARD 1993 WINNER Astound 1.0

For more information about the ES-800C Pro/Mac, our other scanners for Macintosh or PCs, or our complete line of lasers, ink jets, and other technologically advanced computer products, visit your local EPSON dealer or call the EPSON Connection (1-800-BUY-EPSON). Ask for the special offer that makes the most advanced scanner in the business even better.

MACWORLD MW ★★★★

* **HOW TO GET YOUR REBATE/SOFTWARE: 1)** Buy an EPSON ES-800C Pro/Mac between 5/1/94 and 7/31/94. **2)** For rebate/software details and form, call the EPSON Connection, 1-800-BUY-EPSON, or see your local EPSON dealer. Note: software value is manufacturer's suggested retail price.

Adobe PhotoShop, Kai's Power Tools and Astound are trademarks or registered trademarks of Adobe Systems, HSC Software, or Gold Disk respectively. EPSON is a registered trademark of SEIKO EPSON CORP. © 1994 EPSON AMERICA, INC., 20770 Madrona Ave., Torrance, CA 90503. For dealer referral or warranty details, call 800-BUY-EPSON (800-289-3776). In Canada, call 800-GO-EPSON. For Latin America, 305-265-0092.


Astound
The only solution for all your presentation needs – today and tomorrow.
GOLD DISK
Astound
EPSON ES-800C
MORE FREE SOFTWARE AND A $50 REBATE!
EPSON



Circle 8 on reader service card



Circle 1 on reader service card

Macworld

ADVERTISING SALES

VICE PRESIDENT/ASSOCIATE PUBLISHER	Shannon D. Dolan (415/243-0505)
BUSINESS MANAGER/AD SALES	Lisa Buckingham (415/974-7344)
SALES ASSISTANT	Tina Kiewit (415/978-3160)
NO. CALIFORNIA (SAN JOSE, SOUTH)	Cherie La France (415/978-3276)
SALES ASSOCIATE	Nazy Farhang (415/978-3257)
NO. CALIFORNIA (MARIN), WASHINGTON, OREGON, WESTERN CANADA	Stephen McGill (415/978-3155)
SALES ASSOCIATE	Edward Ramirez (415/978-3192)
SOUTHWEST REGIONAL MANAGER	Nancy Coy (714/250-1307)
SO. CALIFORNIA	Molly Shank
SALES ASSOCIATE	Selin S. Gabriel
EASTERN/MIDWEST REGIONAL MANAGER	Joan Kelly (508/872-8600)
NEW ENGLAND, FLORIDA	Paul Bonarrigo
SALES ASSOCIATE	Luanne Newman
MIDWEST/TEXAS	Lisa Ladle (708/827-4477)
SALES ASSOCIATE	Kathy Poppenhagen
MID-ATLANTIC/SOUTHEAST	(201/587-0090)
SALES ASSOCIATE	Cathy Langhaar
MANAGER DIRECT RESPONSE SALES	Beverly Schneider (415/978-3138)
ACCOUNT MANAGERS/MAIL ORDER	Marsha K. Bowers (415/974-7413) Wendi A. Smith (415/978-3117)
MACWORLD SHOPPER	800/888-8622 Niki Stranz (415/978-3105), Carol Johnstone (415/978-3152), Shannon Smith (415/974-7414)

MACWORLD GLOBAL PRODUCT SUPPORT CENTER

DIRECTOR OF MARKETING AND COMMUNICATIONS	Kimberlee A. Luedee
TECHNICAL MANAGER	Chip Carman

MARKET RESEARCH

VICE PRESIDENT/DIRECTOR OF RESEARCH	Gary L. Rocchio
MARKET RESEARCH MANAGER	Linda Lawrence
RESEARCH SERVICES COORDINATOR	Jason Douglas

MARKETING

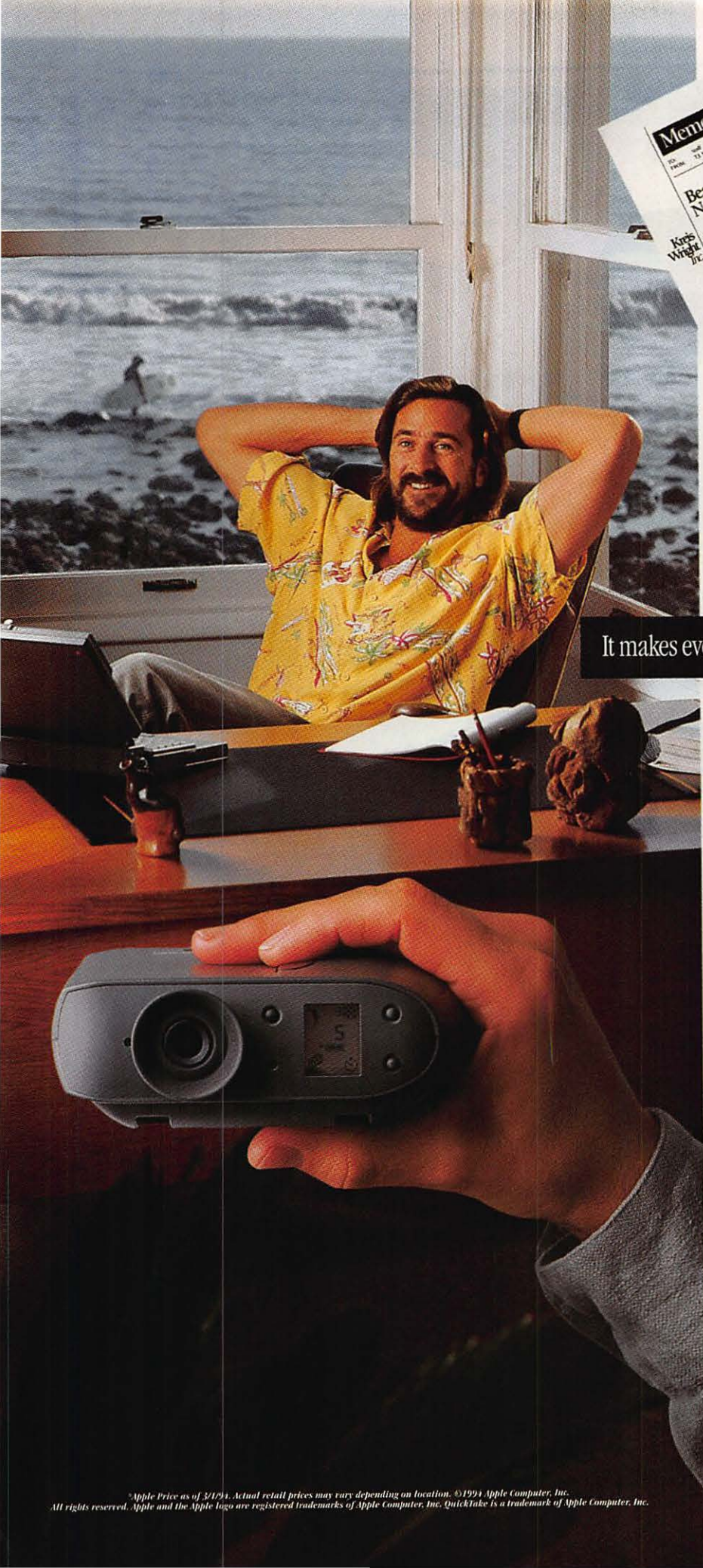
MARKETING DIRECTOR	Cynthia Koral
MARKETING MANAGER	Anne Nichols
MARKETING COORDINATOR	Rhona Hamilton

CIRCULATION

DIRECTOR OF CIRCULATION	Angelina Beitia
SINGLE-COPY SALES DIRECTOR	George Clark
CIRCULATION MANAGER	Lori Hitchcock
NEWSSTAND SALES MANAGER	Martin Garchar
SUBSCRIPTION MANAGER	Elizabeth Jensen
DIRECT MARKETING MANAGER	Jenifer Carini
PROMOTION MANAGER	Kelvin Gee
NEWSSTAND COORDINATOR	Dalia Schwartz
SUBSCRIPTION COORDINATOR	Deirdre Dugan
SUBSCRIPTION INQUIRIES	800/288-6848

PRODUCTION

VICE PRESIDENT/DIRECTOR OF MANUFACTURING	Anne Foley
PRODUCTION MANAGER	Cynthia Mazzola
BILLING INFORMATION MANAGER	So Fong Yip
AD TRAFFIC COORDINATOR	Shellie Anderson
DTP COORDINATOR	Clayton Haberman





It makes everything you do look better than before.

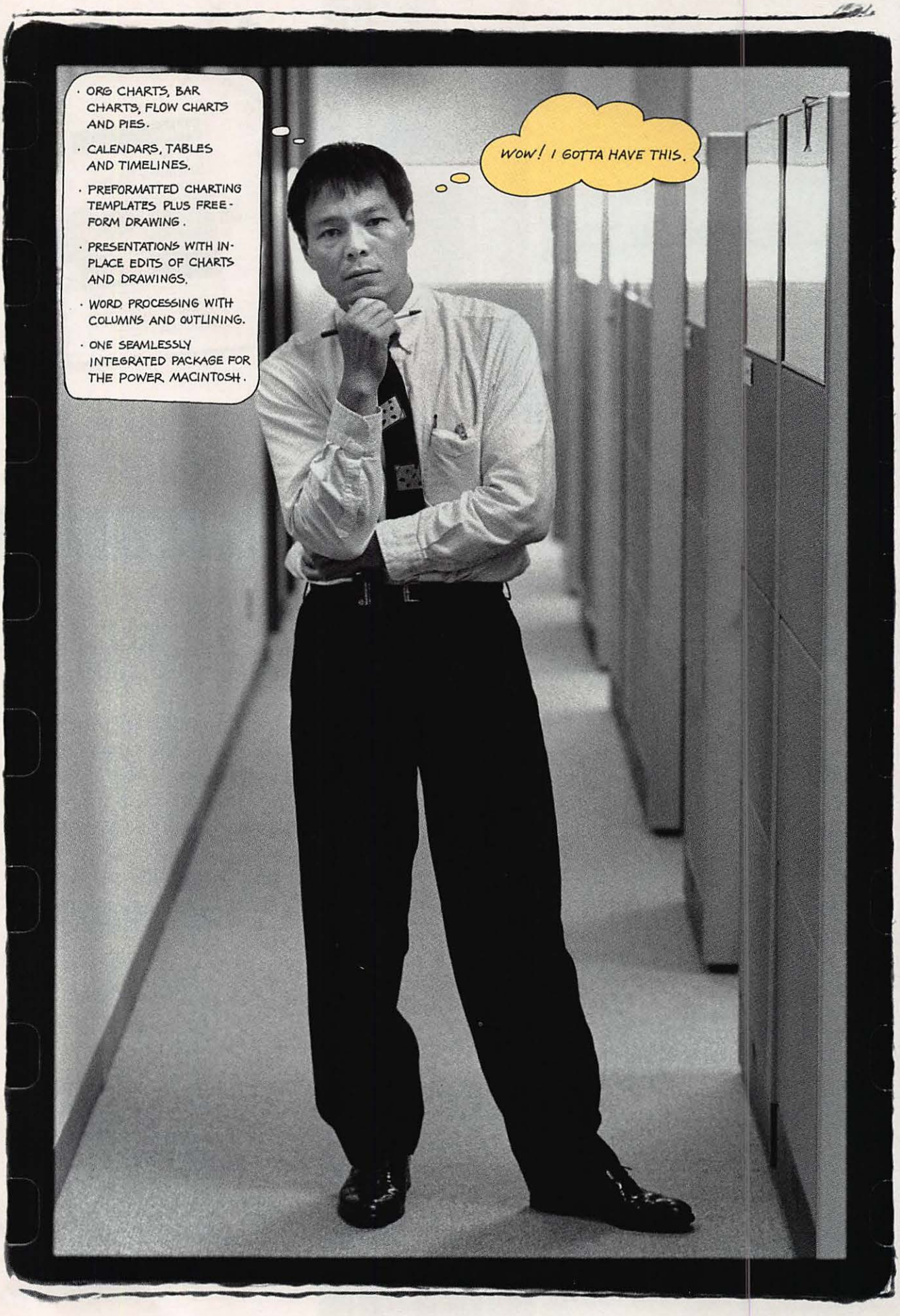
Point, shoot, plug it into your computer. That's it—you've mastered Apple digital photography. It's the fastest way to make an important memo stand out. Or an important new vice president, for that matter.

The Apple® QuickTake™ 100 digital camera takes brilliant 24-bit color photos. It comes with everything you need. And at $749,* it costs less than other digital cameras (and even some surfboards). For an authorized Apple reseller, call us at 800-732-3131, ext. 550. After all, this could make a radical difference in your work.

The New Apple QuickTake 100 Digital Camera



Apple Price as of 3/1/94. Actual retail prices may vary depending on location. *©1994 Apple Computer, Inc. All rights reserved. Apple and the Apple logo are registered trademarks of Apple Computer, Inc. QuickTake is a trademark of Apple Computer, Inc.*


· ORG CHARTS, BAR CHARTS, FLOW CHARTS AND PIES.
· CALENDARS, TABLES AND TIMELINES.
· PREFORMATTED CHARTING TEMPLATES PLUS FREE-FORM DRAWING.
· PRESENTATIONS WITH IN-PLACE EDITS OF CHARTS AND DRAWINGS.
· WORD PROCESSING WITH COLUMNS AND OUTLINING.
· ONE SEAMLESSLY INTEGRATED PACKAGE FOR THE POWER MACINTOSH.
WOW! I GOTTA HAVE THIS.

Think of it as a whole new way of looking at your business.

Some people look at business and see an endless progression of boring, unproductive meetings.

Others look at it and see an endless progression of opportunities. Opportunities to build consensus between colleagues. To sell new ideas. And advance their careers.

Which way do you see it?

That could depend on the tools you use to prepare for those meetings. Which is a good reason to look at ClarisImpact™ software from Claris. And at the new Power Macintosh™ computers from Apple.

It's eight packages in one.

As you've probably heard, the Power Macintosh paves the way for a new generation of powerful business applications.

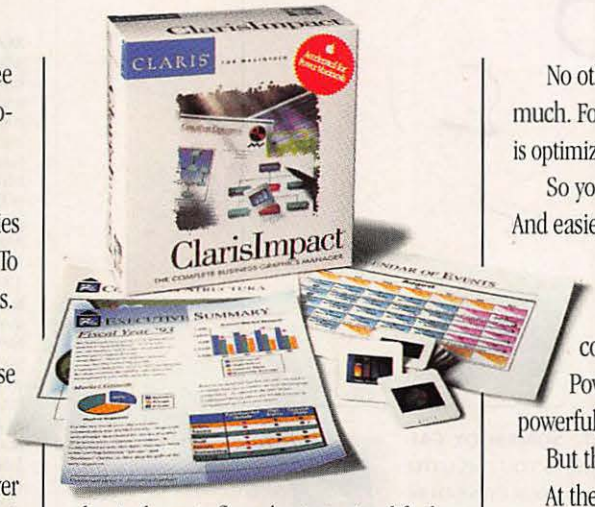


Powered by the new PowerPC chip, Power Macintosh computers run blazingly fast, while providing the expandability, compatibility and AV options you need to embrace the future, today.

Applications like ClarisImpact 1.0.

What makes it so powerful? For starters, buying ClarisImpact is like buying eight sophisticated business graphics programs for the price of one.

Just fire it up, and you can create org charts to document the ever-changing corporate hierarchy. And create flow charts to simplify the most complex of processes.



You can build timelines to help everyone get their work done on time. Create calendars to help workgroups coordinate that time. Draw pictures more powerful than words. Cook up pie charts. Build bar charts. And more.

You can even build on-screen presentations, slides, handouts and overheads.

And refine your reports with the integrated, full-featured word processor.

It's one of a kind.

Unlike other business graphics solutions, ClarisImpact is fully integrated. Which means combining text and graphics is a snap. Editing your images is every bit as easy—you never even have to leave the document you're working on.

Since you're using just one program, you only have to learn one user interface.

And because ClarisImpact was designed for businesspeople, not artists, it includes 2,400 useful clip art images and a wide variety of preformatted templates to help you make your points most effectively.

No other business package gives you so much. For that matter, no package of its kind is optimized for the Power Macintosh, either.

So you can get everything done faster. And easier. The Power Macintosh way.

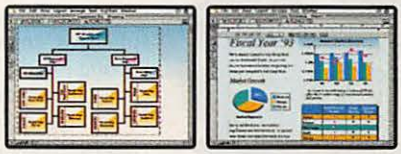
It's Power Macintosh fast.

As you'd expect from any computer named Macintosh®, the Power Macintosh runs thousands of powerful, off-the-shelf business programs.

But that's just the beginning.

At the heart of every Power Macintosh is a PowerPC™ 601 microprocessor, the first of a new family of ultra-high-performance RISC chips developed in a unique collaboration between Apple, IBM and Motorola.

Which means software rewritten to take advantage of this chip runs blazingly fast—faster than the same software would run on a Pentium-based PC.*



With eight charts and graphics modules in one integrated package, ClarisImpact gives you everything you need to make your business look its best.

Which also means ClarisImpact running on a Power Macintosh is, quite simply, one of the fastest business graphics packages you can find.

To try ClarisImpact, call Claris at 800-544-8554, ext. 322, for a free demo disk.†

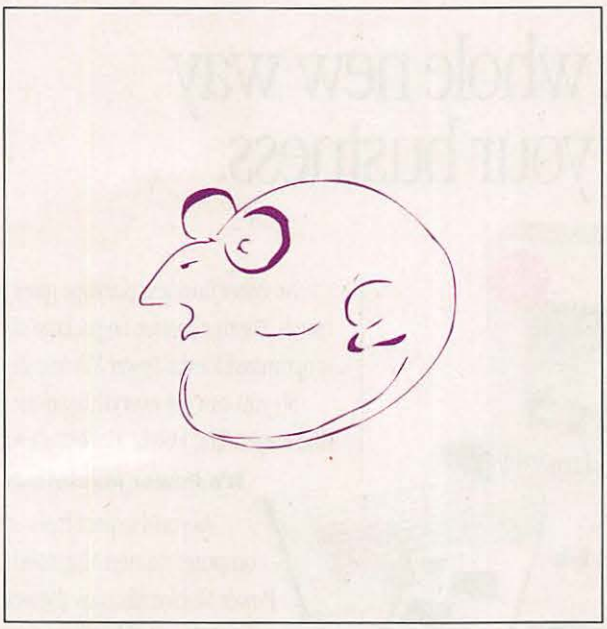
For the name of your nearest authorized Apple reseller, call 800-732-3131, ext. 600. And discover the power in the new Power Macintosh. The power to be your best.®

CLARIS®
Simply powerful software.™

Apple®

Introducing ClarisImpact for Power Macintosh.

Based on an April 1994 performance study by Ingram Laboratories. †Allow 4-6 weeks for shipping. ©1994 Apple Computer, Inc. All rights reserved. Apple, the Apple logo, Macintosh and "The power to be your best" are registered trademarks of Apple Computer, Inc. Power Macintosh is a trademark of Apple Computer, Inc. PowerPC is a trademark of International Business Machines Corporation, used under license therefrom. Claris is a registered trademark and ClarisImpact, "Simply powerful software" and the ClarisImpact design are trademarks of the Claris Corporation.



HALF MAN. HALF RAT. SOMEBODY CALL THE ENQUIRER. WE'RE SHOWING YOU THIS LITTLE VISUAL PUZZLE TO MAKE A POINT. YOUR EYES CAN BE TRICKED. OUR MONITORS, THOUGH, DO NOTHING OF THE SORT. THEY'VE GOT SHARP PICTURE IMAGERY SO YOU'LL ALWAYS KNOW WHAT YOU'RE LOOKING AT. FOR FURTHER INTERPRETATION, CALL 714-530-9984. TRIAM



Circle 211 on reader service card



Keep the Flame Alive

The lamp of freedom and the light of learning can take many forms.

Your company's used computers, laser printers, modems, and other surplus equipment can help empower young minds in America, and advance the development of emerging democracies around the world.

The East West Foundation takes your surplus or used equipment and distributes it to American schools and charities and to democratic and educational institutions in Eastern Europe, Africa, Asia, the Commonwealth of Independent States, and Latin America—wherever it can make a difference. And it *does* make a difference.

Donating used or overstock computer equipment to the East West Foundation can make a difference to you, too—at the bottom line. Because all donations are tax-deductible. And all types of computer equipment are welcome.

To arrange for a donation or for more information, please call:

EastWestFoundation
49 Temple Place
Boston, MA 0211
(617) 542-1234
Fax (617) 542-3333

EAST WEST
EDUCATIONAL DEVELOPMENT FOUNDATION

A Not-For-Profit Corporation

Macworld

HOW TO CONTACT MACWORLD

SUBSCRIPTION QUESTIONS
Mainland USA 800/288-6848
All other locations 303/447-9330
or write Subscription Services
P.O. Box 54529
Boulder, CO 80322-4529

MACWORLD ON AMERICA ONLINE
Macworld subscribers can contact *Macworld* editors online via the Macworld area on America Online. The area features reviews, news, new-product announcements, version information, a database of products, and *Macworld*-sponsored message boards and conferences. Several of our editors log on regularly. To obtain a free America Online software kit, call 800/227-6364, extension 5254.

MACWORLD IN MICROFORM
Macworld is available on microfilm and microfiche from UMI, 300 N. Zeeb Rd., Ann Arbor, MI 48106-1346; 313/761-4700.

BACK ISSUES OF MACWORLD
Write to Back Issues of *Macworld*, c/o Snyder Newell, Inc., P.O. Box 7046, San Francisco, CA 94120-9727; $6 per issue ($20 overseas). Prepayment in U.S. funds necessary. Make checks and money orders payable to Macworld Magazine.

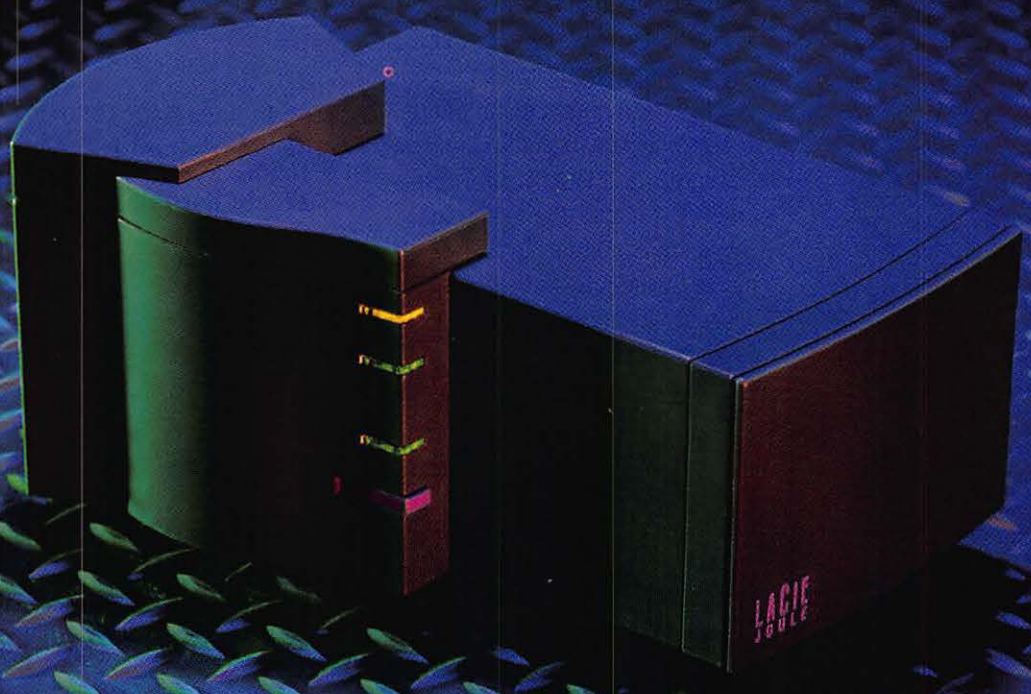
MACWORLD EDITORIAL
MAIL OR COURIER Macworld Communications, Editorial Dept., 5th floor, 501 Second St., San Francisco, CA 94107; 415/243-0505.
AppleLink: Macworld1
CompuServe: 70370, 702 Fax: 415/442-0766
LETTERS TO THE EDITOR All written comments, questions, and suggestions regarding any aspect of the magazine are read by our editor. We reserve the right to edit all submissions; letters must include your name and address. Direct all correspondence (by mail or electronically) to Letters to the Editor.
QUESTIONS AND QUICK TIPS Direct questions or tips on how to use Mac computers, peripherals, or software (by mail or electronically) to Quick Tips, Lon Poole. Please include your name and address.
CONSUMER ADVOCATE Been burned? Really steamed? Direct your concerns (by mail or electronically) to Conspicuous Consumer, Deborah Branscum.
NEW PRODUCTS AND UPDATES Direct press releases and product announcements (by mail or electronically) and shrink-wrapped software upgrades (by mail or courier) to New Products Editor.
BUGS & TURKEYS Mail in descriptions of turkeys (flaws in conception or design) or bugs (defects or flaws in execution); copies of correspondence with vendor or telephone contact notes (if any); and your telephone number, mailing address, and T-shirt size.
STREETWISE SHOPPER To obtain an application for inclusion of special product promotions in *Streetwise Shopper*, vendors and resellers should contact Charles Barrett (by mail or electronically).
REPRINTS AND PHOTOCOPY PERMISSION Permission will be granted by the copyright owner for those registered with the Copyright Clearance Center (CCC) to photocopy any article herein—for personal or internal reference use *only*—for the flat fee of $1.50 per copy of the article or any part thereof. Specify ISSN 0741-8647 and send payment directly to the CCC at 27 Congress St., Salem, MA 01970. Address requests for reprint orders and for permission to copy editorial for other purposes to Reprints and Permissions, Editorial Dept.
WRITING FOR MACWORLD Do not send us unsolicited manuscripts. If you're interested in writing for *Macworld*, send a stamped, self-addressed envelope along with a request for our writer's guidelines. Direct (by mail) to Writer's Guidelines, Editorial Dept.

FOUNDER David Bunnell
FOUNDING EDITOR Andrew Fluegelman 1943–1985

Macworld is a publication of Macworld Communications, Inc. *Macworld* is an independent journal not affiliated with Apple Computer, Inc. *Macworld, Macworld Interactive, Macworld Shopper, MW, MW Lab, MW Shopper, Desktop Critic, Quick Tips, Star Ratings,* and *Conspicuous Consumer* are registered trademarks of International Data Group, Inc. *Power PC World* is a trademark of IDG, Inc. APPLE, the APPLE LOGO, MAC, and MACINTOSH are registered trademarks, and MACLETTER and POWERBOOK are trademarks of Apple Computer, Inc. Printed in the United States of America. Copyright © 1994 Macworld Communications, Inc. All rights reserved. *Macworld* is a member of IDG Communications, the world's largest publisher of computer-related information.

BPA INTERNATIONAL IDG

Introducing Joule,™ a modular system so innovative it redefines mass storage.



LACIE
LIMITED
A QUANTUM COMPANY

The Joule™ Modular Storage System
only from La Cie, a Quantum Company

The Joule™ Modular Storage System

Joule System Components

Innovative technology at surprisingly affordable prices.



The Joule Top Cap



Joule 2.5" Hard Drive Module with Mount



Joule 3.5" Half-Height Module with Mount



Joule 3.5" Full-Height Module with Mount



The Joule Base

The Joule system and switchable active termination are patent pending.

Like building blocks, Joule tops one great drive with another—No tools required.

There's a reason Joule (pronounced "Jewel") doesn't look like other mass storage systems. It isn't. Joule is modular. Uniquely versatile. Unconventionally easy-to-use. And unexpectedly elegant.

Joule is a revolutionary concept that transcends the boundaries of conventional drive engineering. It allows you to combine a variety of hard disk drive and removable media drive options into a single vertically interlocked system.

Joule's modular concept eliminates cumbersome redundancies in cables, power supplies and circuitry. It's unique tower design makes installation child's play and expanding or changing your system effortless and fast. It also allows you to move drive modules in and out of the system—at will—without affecting the SCSI chain.

Joule reinvents the "ins and outs" of portable mass storage.

Everyone knows the hardest part of moving portable hard drives from one computer to another is wrestling with the cables. Joule's drive modules are cable free. They mount and dismount from the system with single-handed ease. And, because removing modules doesn't affect the SCSI chain, there's no easier way to move mass storage—from computer to computer, across the office, across town or across the country.

Joule Base with 1080MB Hard Disk Installed, plus 105MB SyQuest Module and 270MB Hard Disk Module



340MB Joule Base

$389

Joule Base with 340MB Hard Disk Installed

*Call for details on terms, conditions, limited money back guarantee (shipping not included), warranty and free offers. Comparisons may not apply to all vendor products, check specifications. Prices do not include shipping and only apply to products shipped within the continental United States. International customers must pay for all shipping charges. Add sales tax where applicable. Joule, ZFP, Tsunami, PocketDrive, PocketDock, Silverscanner, Silverscan, Silverlining, La Cie and the La Cie logo are trademarks of La Cie, Ltd., a Quantum Company. FORTUNE 500 is a registered trademark of the Time Inc. Magazine Company. All other trademarks are the property of their respective companies. All prices, specifications, terms, warranties, descriptions, products and services herein are subject to change without notice or recourse.

© Copyright 1994 La Cie, Ltd. 8700 SW Creekside Place, Beaverton, OR 97005. Phone: (503) 520-9000, Fax: (503) 520-9100. All rights reserved. Printed in U.S.A.

advantages are simply towering.

The ultimate in plug n' play versatility. Here's how it works.

The Joule Base combines a hard drive or removable drive mechanism with a universal 100 watt power supply and standard SCSI circuitry plus a unique list of performance and convenience features. It can operate alone or support up to seven mounts and drive modules. Each features La Cie's exclusive LaCieTerm™ digital active termination switch (patent pending), a SCSI port and ID switch, and two auxiliary power outlets for attaching other SCSI peripherals. The power switch, activity LED and termination status LED are conveniently located in the front.

Joule Mounts pass power and SCSI signals from the base through each interlocking mount (patent pending). Mounts also allow modules to be inserted or removed, leaving the SCSI chain intact.

Joule Drive Modules offer even greater selection. Hard disks from 170MB to 2050MB, plus a full range of SyQuest, optical, tape and DAT modules are available to complete your system.

The Joule Top Cap contains the SCSI cable to the Mac giving the system a clean single-cable design, regardless of the number of modules.

Building on a firm foundation.

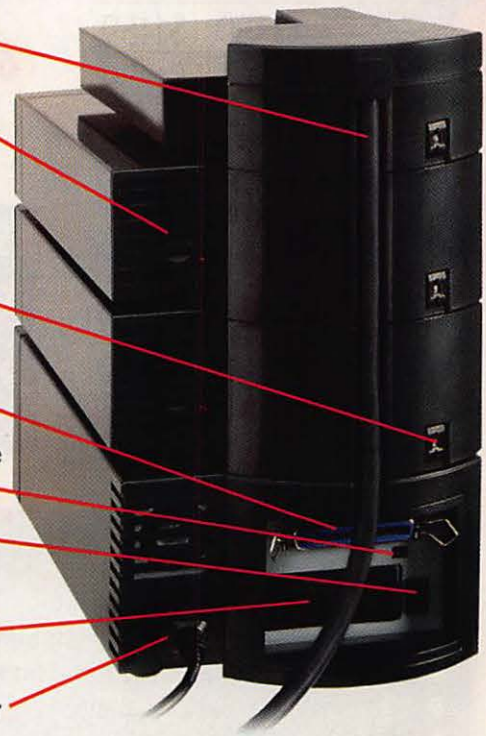
With Silverlining disk management software, Quantum quality, a great warranty and toll-free technical support, Joule offers every La Cie advantage. As a Quantum Company, La Cie is backed with a Fortune 500® commitment to quality and service.



Joule Base with 1080MB Hard Disk Installed, plus 2050MB Hard Disk Module, 2050MB Hard Disk Module (detached), 2050MB Hard Disk Module and 1080MB Hard Disk Module

OVER 8000MB TOTAL!

Joule System Rear View



LACIE LIMITED
A QUANTUM COMPANY

To order or for more information, call toll-free

800-999-1488

Mon.-Fri. 5 a.m.-7 p.m. & Sat. 8a.m. -noon PST

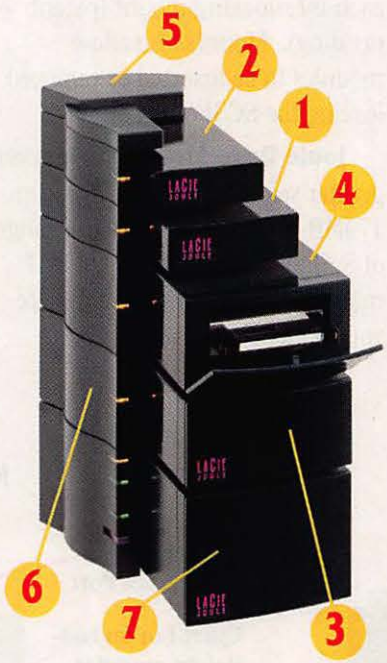
International 503-520-9000 Fax 503-520-9100 (24 hrs.)
UK 0800-89-3025 Australia 0014-800-123-007
VISA, MasterCard, C.O.D. and approved purchase orders accepted.*

Everything about Joule™ is

Joule System Components

Joule interlocking storage system.

The Joule Modular Storage System is the most versatile and convenient mass storage solution available (patent pending). Select from a full range of hard disk and removable media options in base and module units.



1 Quantum 3.5" Drives

Capacity	Base w/ TopCap	Module w/Mount
170MB		$259
270MB		$329
340MB	$389	$359
540MB	$639	$609
1080MB	$949	$919
NEW! 1440MB	$1189	$1159
3 1800MB		$1259

2 Quantum 2.5" Drives

Capacity	Module w/Mount
85MB	$299
170MB	$359
256MB	$449

3 Seagate Drives

Capacity	Module w/Mount
1650MB	$2039
2050MB	$2329

4 Removable Drives

Drive	Base w/ TopCap	Module w/Mount
SyQuest		
105MB	$539	$509
270MB	$689	$659
DAT		
5.0GB DAT	HOT!	$1159
TurboDAT		$1359
8.0GB DAT		$1729
Tape		
155MB		$569
600MB		$789
Optical		
230MB	$1099	$1069
230MB Cartridge		$59

Additional Accessories

5 Top Cap	$49
6 Mount	$69
7 Joule Base (no drive)	$199

The La Cie Advantage

MACWORLD MW EDITORS' CHOICE ★★★★★ Bobker's Dozen ID Awards

- Silverlining™ Disk Management Software
- Unlimited TOLL-FREE Technical Support
- 30 Day Money Back Guarantee
- All Drives Burned In and Tested
- Ready to Plug and Play
- Valuable Warranties
- LaCieTerm™ Digital Active Termination
- Double Shielded SCSI Cables
- FCC*, UL, TUV, VDE & CSA Approved
- Termination Status LED
- Surge Protection
- Front Power Switch

*Call for details on terms, conditions, limited money back guarantee (shipping not included), warranty and free offers. Comparisons may not apply to all vendor products, check specifications. Prices do not include shipping and only apply to products shipped within the continental United States. International customers must pay for all shipping charges. Add sales tax where applicable. Joule, ZFP, Tsunami, PocketDrive, PocketDock, Silverscanner, Silverscan, Silverlining, La Cie and the La Cie logo are trademarks of La Cie, Ltd., a Quantum Company. FORTUNE 500 is a registered trademark of the Time Inc. Magazine Company. All other trademarks are the property of their respective companies. All prices, specifications, terms, warranties, descriptions, products and services herein are subject to change without notice or recourse. © Copyright 1994 La Cie, Ltd. 8700 SW Creekside Place, Beaverton, OR 97005. Phone: (503) 520-9000, Fax: (503) 520-9100. All rights reserved. Printed in U.S.A.

remarkable...even the price.

La Cie Storage Solutions



Tsunami™: Sleek, transportable.

Our award-winning Tsunami drives offer superb performance and design.

Quantum 3.5" Drives

Capacity	Internal	Tsunami
170MB	$199	$259
270MB	$269	$329
340MB	$299	$359
540MB	$549	$609
1080MB	$859	$919
1080MB	$859	$919
NEW! 1440MB	$1099	$1159
1650MB S	$1979	$2039
1800MB	$1199	$1259
2000MB S	$1919	$1979
2050MB S	$2269	$2329

S=Seagate mechanism

PocketDrive™: Palm-sized portability.



Weighing just under 10 ounces, it's the only pocket portable to offer the PocketDock™ docking option.

Quantum 2.5" Drives

Capacity	Internal PowerBook*	PocketDrive
40MB		$239
85MB	$199	$299
170MB	$259	$359
256MB	$349	$449

*LaserWriter 630 installation kit available

Removable media: Limitless storage options.

For the finest in removable media mass storage solutions, La Cie offers an outstanding selection of drive technologies in our zero-footprint case. Silverlining (or Retrospect® with tape and DAT drives) plus one free media cartridge included.

ZFP Removable Drives

Drive	Internal	External
SyQuest		
44MB 5.25"	$369	$429
88C MB 5.25"	$399	$459
105MB 3.5"	$449	
NEW! 270MB 3.5"	$599	
HOT! 200MB 5.25"	$559	$599

	44MB	88MB	105MB	270MB	200MB
Cartridges	$69	$99	$79	$99	$109

Each drive comes with Silverlining™ and one free SyQuest cartridge.

CD-ROM

Toshiba Dual Speed $639

Optical Drives

230MB $1009

230MB Cartridge $59

Each drive comes with Silverlining™ and one free 3.5" optical cartridge.

DAT

HOT! 5.0GB DAT	$1099	$1159
TurboDAT	$1299	$1359

Tape

155MB		$569
600MB	$729	$789

Each drive comes with Retrospect™ and one free DAT or TEAC tape cartridge.

Color Scanning Solutions



Silverscan II makes scanning as quick, painless and productive as possible. With features like dynamic color preview (16 sec.), magnify in preview, proof in preview, savable scan settings, up to 400% scaling in 1% steps and up to 1600 dpi in 1 dpi steps—all in one pass. It's easy for the beginner and powerful for the advanced user. And it's Macworld's Editor's Choice.

"...Fast and a pleasure to use. ...Produced high-quality printed images with good resolution, and its documentation was tops."
Macworld, November 1993

Silverscanner II

All Silverscanners come with our powerful Silverscan software, Color It! image editing software and Read-It O.C.R. Pro.

Basic Bundle	$1599
Basic Bundle Plus Cachet	$1899
Bundle Plus Cachet & ColorStudio	$1999
Bundle Plus Photoshop	$1999
Optional Transparency Attachment HOT!	$799
Optional Sheet Feeder Attachment HOT!	$499

LA CIE LIMITED
A QUANTUM COMPANY

To order or for more information, call toll-free
800-999-1488
Mon.-Fri. 5 a.m.-7 p.m. & Sat. 8a.m. -noon PST
International 503-520-9000 Fax 503-520-9100 (24 hrs.)
UK 0800-89-3025 Australia 0014-800-123-007
VISA, MasterCard, C.O.D. and approved purchase orders accepted.*

Circle 52 on reader service card

HOP ON!

IF YOU'RE NOT USING CANVAS™... YOU'RE MISSING OUT.
When the rubber hits the road, you can't afford to spin your wheels using under-powered graphics software. You need drawing tools designed for today's high-tech tasks. Tools that deliver unrivaled speed and accuracy without inhibitions. You also need them now, not years from now.

WE DELIVER.
Canvas has just the right combination of tools to help you enjoy your work and become more productive. Without sacrificing quality or compromising your creativity. Just ask our biggest fans — our competitors. They've been busy copying innovations Canvas users have enjoyed for years. Like unlimited layers, integrated drawing and painting, preview editing and object path combinations*, to name just a few. Imagine what will happen when they find out what we're working on today. The choice is clear... you can use Canvas now or spend a lifetime waiting for the competition.

DON'T LISTEN TO US.
Our competitors aren't our only fans. Just listen to the 400,000† high-tech professionals who power up Canvas every day in seven languages to produce today's top technical illustrations. Or the expert analysts from leading multinational corporations, government agencies and top educational institutions who have chosen Canvas as their graphics standard. Or the computer experts at leading industry publications. They'll all tell you Canvas is the most advanced, cost-effective multi-platform graphics solution. Period.

WE WON'T BORE YOU WITH THE DETAILS.
Needless to say, Canvas has all the drawing tools and features you'll probably ever need. From freehand Bézier curves to 1/65,000th-inch precision and fifteen flavors of auto-dimensioning. From slide presentations with QuickTime™ support to built-in color separations. From precision type handling to over a dozen industry-standard import/export tools, including EPSF, DXF and CVS (Canvas for Windows). And thanks to our unique Open Architecture Technology (OAT™*), there's plenty of raw power available and even more when you need it. As proof, let us point out that every detail of this ad was created and color separated within Canvas.

DON'T MISS OUT ANY LONGER.
Stop grinding your gears with old technology. Quit wasting valuable time and energy with the wrong graphics tools. Dust off your leather jacket, put on your baddest shades and make tracks to your favorite Canvas reseller today. Or call 1-800-733-6322 to order, and hop on for the ride of your life. Helmet not included.



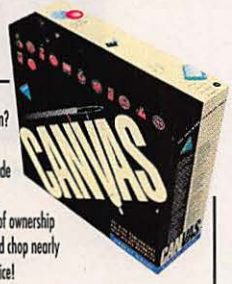
CANVAS

THE HIGH-PERFORMANCE DRAWING ENVIRONMENT

WINDOWS™ Macintosh®

MONEY BACK GUARANTEE 30 DAY

$149.95 COMPETITIVE UPGRADE



Still using some other graphics program? Now we've made switching to Canvas even easier! Keep their clip art, but trade in that scooter for some real precision drawing power. Simply show us proof of ownership of any Macintosh graphics program and chop nearly $250 off Canvas' already low $399 price!

DENEBA SOFTWARE 7400 S.W. 87th Avenue, Miami, Florida 33173 • Tel (305) 596-5644 • Fax (305) 273-9069
†Even more by the time you read this! Major credit cards accepted. Add $10 shipping in the US and $15 in Canada. Call for shipping costs elsewhere. ©1994 Deneba Systems, Inc. Canvas is a trademark of Deneba Software. Windows is a trademark of Microsoft Corporation. Macintosh is a registered trademark of Apple Computer, Inc. All other trademarks are the property of their respective owners. *Some call them PathFinders™. **OATs are good for you. Offer valid in the United States and Canada and is subject to termination or change without notice. This offer is not valid with any other promotion or offer.

Circle 57 on reader service card



BY ADRIAN MELLO

Grading the Latest Macs

Power Macs and PowerBooks

ONCE AGAIN, IN MERE MONTHS Apple has remodeled almost the entire Macintosh lineup. For longtime Macintosh users it's now a dreamlike world in which Apple is the value or performance leader in many niches. This means it's hard to go wrong buying a Mac, and we no longer have to put up with the snickers of PC users. This month I grade the new Power Macs and the new PowerBooks. I also update the grade of one Quadra for good measure. Overall, this is the best report card I've ever given to Apple's lineup, and these high marks testify to how far Apple has come in meeting its customers' needs.

I grade each of the models, but as usual, these grades are preliminary and should not be mistaken for full reviews.

Blackbird Flies

Let's start with the latest development, the new PowerBooks. The 500 series, code-named Blackbird, is the first big change in the all-in-one PowerBook lineup. These 68040-based models are faster and offer better screen options, longer battery life, greater expandability, and a better keyboard and pointing device. Finally, now that Apple offers the Global Village modem as an option, you can buy a decent modem.

More and more users have been getting rid of their desktop systems and operating solely on their PowerBooks. Building video into the 160 and 180 series models was Apple's acknowledgment of this working style. Several new features of the 500-series models make them even stronger candidates to replace desktop systems. These features include the higher RAM ceiling of 36MB, a full-size keyboard, built-in Ethernet, support for larger monitors, and PowerPC upgradability—all of which make the 500 series more than adequate for most users who want to attach their Mac to a color monitor or a network. With the improved keyboard and pointing device, most users probably won't need to buy a separate keyboard and mouse for use at their desks (see "PowerBooks: The Next Generation," in this issue).

If you configure your PowerBook 500 with a large-screen monitor, a big hard disk, and a generous amount of RAM, you should even be able to create reasonably demanding page layouts and presentations without much compromise, comparable to using a Quadra 610 or perhaps even a 650. Don't expect a 500-series PowerBook to perform like a Power Macintosh, but many users won't need that much power. On the downside, there's no FPU, and Apple should have equipped the 500 models with at least 8MB of RAM—4MB is no longer comfortable.

The 500s' Fortunes

Looking at the individual models, the 520 and 520c are good replacements for the



165 and 165c. The 520 and the 520c both get a solid B. If they cost a little less, they would get a B+. I would wait a little before buying one, because I think the prices will drop after initial pent-up demand is satisfied. Lowering the price would also address another problem: the PowerBook line doesn't offer a really compelling value at the low end. The 145B and 165 are yesterday's news. Improvements in portable-computing technology (and most other PowerBooks) have passed them by. Apple needs to offer an up-to-date solution for value-conscious customers. The 145B gets a C–. The 165 is particularly out of place and deserves a D because it is not much less expensive than a 520. If the 520 and 520c cost a little less, demand for the 165 would go away. Even so, because of their excellent (noncolor) active matrix screens, I would still consider a closeout deal on the discontinued PowerBook 180 or even a used 180 or 170 before buying a passive matrix 145B, 165, or 520, even if the 180 were the same price.

The 540 and 540c models are faster and include better screens and an extra battery (the new battery is expensive, at $125). The 520c's dual-scan passive matrix color is better than the color of earlier passive matrix displays, but in my estimation, active matrix screens are simply superior. Having used PowerBooks with both screen types, I've found that working with a lower-quality screen is like peering through frosted glass. For laptops I still prefer the appearance and longer battery life of black-and-white screens, but because of the 540c's combination of four hours of battery power and an active matrix screen, it's the first color PowerBook I would seriously consider. With all this in mind, I give the 540 and 540c an A–. I would have given them a solid A except that they cost a little too much and don't include an FPU.

The Duo 280 and Duo 280c are not completely new; they simply update (and replace) the 250 and 270c. The new models do benefit from a boost in speed, so they are an appealing alternative to the all-in-one design of the 500 models. For this reason the Duo 280 receives an A–, while the color Duo 280c receives a B because the 580c is a better solution for color users. If you really need a color portable, you probably will need to attach to an external monitor at times. The 580c has built-in support for an

continues

GLEN MITSUI/STUDIO MD

external monitor. The Duos require a MiniDock (with its extra weight) to attach to a monitor. I've used all of the PowerBooks, and I'm happiest with my Duo 250, which I use with the Duo Dock, an elegant solution to the dilemma of desktop versus portable.

Power to the Macintosh

The Power Macintosh was the biggest step forward in Apple's desktop line since the color Mac in 1987. We previewed the Power Mac in depth in our May issue. Surprisingly, the most compelling Power Mac is the low-end 6100/60. If you are in the market for a desktop machine and you don't need to add a lot of boards, this is the way to go. I have routinely seen prices under $1600 for a configuration with 8MB of RAM and a 160MB hard drive (not including monitor or keyboard). The additional cost for this model over the Quadra 610 is often less than $300. The Power Mac 6100/60 deserves an A–.

The Power Mac 7100/66 and 8100/80 are good machines, but their appeal is limited for now because of the scarceness of native Power Mac software. The 7100/66 gets an A, and the 8100/80 gets a B based on price/performance. If you rely on applications that are not yet available in native mode, then you should subtract a grade from any Power Mac until the necessary software ships.

For the time being, I recommend the Quadra 650 for those who want to have their cake and eat it too. I've seen this model priced at $2300, and it's still the best price/performance value among the 680X0-based Macintoshes. When the native Power Mac applications you need are ready, you should be able to purchase Apple's PowerPC upgrade card and get 66MHz PowerPC performance. At $700 this card is very reasonably priced; even after you add this cost to the price of the Quadra 650 you still come out ahead. For the next few months, the Quadra 650 is the best option for users whose work depends on software that's not yet offered in native Power Mac versions. Because of its overall value and the upgrade-card strategy, the Quadra 650 earns an A– and ties for top honors.

Macworld and the Power Macs

Speaking of honors, I'm pleased to say that the Computer Press Association recently selected *Macworld* as Best Computer Magazine for 1993 (in the highest-circulation category). It's especially gratifying that the computer-journalism professionals who make up the CPA have honored *Macworld* with this award for the fourth year in a row. But we didn't get to this point by standing still—as part of our constant efforts to make *Macworld* more useful and to improve our in-depth coverage of the Power Mac transition, we added the *PowerPC News* section (now called *Power Mac News*) even before the new machines began shipping. Because our Power Mac coverage now extends across the entire magazine, this month we are adding a logo that identifies any coverage pertinent to the Power Macintosh. Power Macs will eventually affect all users, and we intend to ensure that you can easily find Power Mac information in our pages.

So far, the Power Mac transition seems to be going very well. Apple recently announced that it sold 175,000 Power Macs in the first few weeks after their introduction. No insoluble problems have surfaced, and all our gauges show that interest in Power Macs is intense. *Macworld* is committed to being the best source of information on the Power Macintosh during this exciting time. m



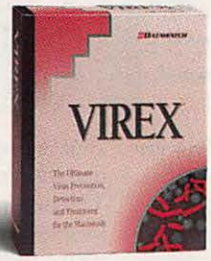
MOVE OVER SAM.®
VIREX® IS NOW 36 TIMES FASTER!*

The problem with anti-virus software is that it slows down your Macintosh. Every time you start your computer, run a program or insert a disk, you spend way too much time waiting. After all, you spent a lot of money for a FAST Mac, right?

Virex 5.0 solves this problem with new SpeedScan™ technology that enables Virex to scan, detect and eliminate viruses with blinding speed. With SpeedScan, Virex 5.0 does in 10 seconds what SAM† needs over 6 minutes to do. Yes, seconds, not minutes.

Of course, along with that you get anti-virus software that's the easiest to install, the simplest to use, and the most effective against viruses. And you automatically receive your first Virex upgrade on disk absolutely FREE.

Ask your retailer for Virex, or call us for more information on our volume purchasing programs. Because once you put Virex to the test, it'll be time for SAM to hit the road.



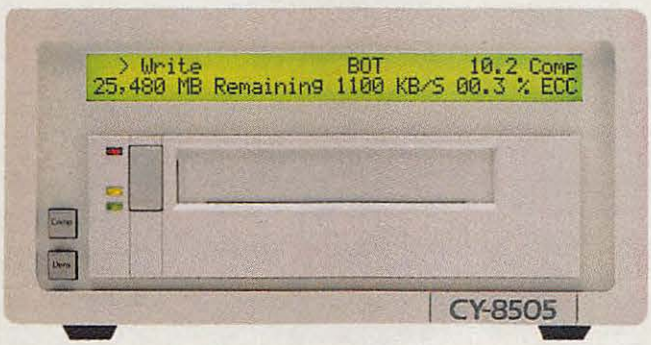
VERSION 5.0
NOW SHIPPING

DATAWATCH 919-549-0711/ FAX 919-549-0065 / BBS: 549-0042 (8,N,1)/ Datawatch & Virex are registered trademarks, & SpeedScan is a trademark, of Datawatch Corp.

*In a head-to-head test conducted on a Macintosh IIci, scanning 79 megabytes of files (1,571 files) on a 230 MB hard drive. Results may vary but, in all tests, Virex was dramatically faster. †SAM is a registered trademark of Symantec Corp.

Circle 37 on reader service card

OUR 25 GB TAPE DRIVE JUST HIT A NEW HEIGHT.



It's smaller; yet our new CY-8505 backs up the largest Macintosh computer systems and networks, unattended.

How? Optional data compression boosts the 5 GB capacity to up to 25 GB. And it's fast – able to write data at speeds of up to 90 MB per minute. Such high performance means huge savings in manhours and media costs. Best of all, the MTBF rate of 80,000 hours gives you data reliability you can depend on.

The CY-8505 features software that lets you schedule full or incremental backups to run any time, day or night. A directory of files is stored on the disk, making it fast and easy to restore. A backlit status display gives you command under execution, compression ratio, transfer rate, tape remaining and more in a clear, easy to read format.

In short, you won't find a more advanced, more reliable solution on the market.

What's more, we back this turnkey solution with a two year warranty that includes responsive service and support from our in-house staff.

TRUE COMPATIBILITY WITH

Alliant	AT&T	DEC	ICL	Novell	Prime	Texas Instruments
Alpha Micro	Basic-4	Gould/Encore	Intergraph	OS/2	Pyramid	Unisys
Altos	Concurrent	HP	Macintosh	PS/2	Sequent	Ultimate
Apollo	Convergent	IBM	McDonnell Douglas	Parallel Port	Silicon Graphics	Wang
Arix	DataGeneral	IBM PC	Motorola	Pertec	STC	*– and more*
			NCR	PICK	Stratus	
			NeXT	Plexus	Sun	

For more information, call today at **(804) 873-9000.**

CONTEMPORARY
CYBERNETICS

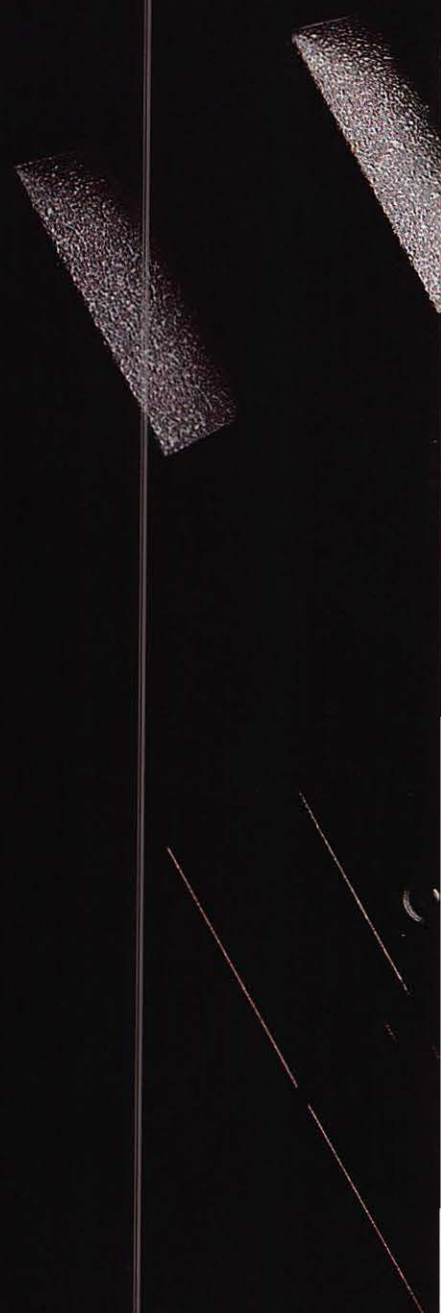
Rock Landing Corporate Center • 11846 Rock Landing • Newport News, VA 23606 • Fax (804) 873-8836

Circle 188 on reader service card

The new AS/400.
Black goes with everything.

If your business plan includes client/server computing, rest assured that the new AS/400® Advanced Series will coordinate impeccably. Everything about it is designed with a new openness and interoperability, to thrive in client/server environments. There's open client access, to serve OS/2,® Windows,™ DOS, Macintosh or UNIX® systems with equal ease and security. Powerful features that provide open database access and protocol-independent networking are built in. There's a wide choice of AS/400 Advanced Servers—high performance processors fine-tuned for client/server duty. And thousands of AS/400 client/server applications are ready today. In short, the new AS/400 is so easy to implement and manage, it represents a new generation in client/server computing: a system designed to stand out, even as it blends in. For additional information, call 1 800 IBM-6676, ext. 641.

IBM, AS/400 and OS/2 are registered trademarks of International Business Machines Corporation. Windows is a trademark of Microsoft Corporation. UNIX is a registered trademark of UNIX System Laboratories, Inc. Macintosh is a registered trademark of Apple Computer, Inc. ©1994 IBM Corp.





The new AS/400 Advanced Series from IBM

Circle 179 on reader service card

If there's a needle in here, AppleSearch will find it.



Searching for information on a computer network can be a lot like looking for the proverbial needle in a haystack. Enter a pitchfork with a serious attitude: AppleSearch™. Powerful new information-retrieval software designed to dig easily into the wealth of data residing across your office network. AppleSearch turns a typical file server into a rather untypical knowledge server. It quickly explores your entire AppleTalk® network in search of information on any topic you may select. And more important, hones in on precisely the pieces you need. It's incredibly easy to use. Even first-time users can start searches by creating "Reporters" with simple English queries like "Find all references to volcanic activity in the South Pacific." The Reporters do the rest. They scan through a range of selected data, documents and information sources—such as servers, on-line services, news feeds, even CD-ROMs—in search of whatever subject you're interested in.

A personal, electronic update is then delivered to you with a list of all the information you requested, ranking each entry based on how well it matched what you were looking for. Reporters can also deliver updated information to you on a scheduled basis—whether you're in the office or not. They can even be shared with other users. Or accessed remotely using Apple® Remote Access. So, for example, a marketing manager can easily track market announcements from on-line news feeds. Attorneys can access references to legal cases. And teachers and students can quickly research subjects and identify resources they might otherwise miss.

So how do you find AppleSearch? Call us at 800-538-9696, extension 160, for more information as well as the name and location of the authorized Apple reseller in your neighborhood. AppleSearch. It's just what you've been looking for.

In Canada, call 800-665-2775, ext. 910. © 1994 Apple Computer, Inc. All rights reserved. Apple, the Apple logo, AppleTalk and Macintosh are registered trademarks of Apple Computer, Inc. AppleSearch is a trademark of Apple Computer, Inc. This ad was created using Macintosh® personal computers.

JULY 1994

Letters

Here Comes Trouble

GENE STEINBERG'S GENERALLY COMplete article about troubleshooting system-level problems ("Troubleshooting Tips and Tools," April 1994) does not emphasize enough Apple's own Disk Tools disk, still included free with all Macintoshes (except Performas). I am a frontline technical-support specialist working for a major software publisher, and I would speculate that less than 20 percent of my callers know the value of the Disk Tools disk. Except for this omission, the article was well written, and a great description of what options are available when problems arise.

Max Pruden
Hayward, California

Disk Tools can be a good first line of defense in case of disk trouble, but readers should be aware that the Apple HD SC Setup component of the Disk Tools disk works only with hard drives purchased from Apple, as Apple adds an ID code to the ROM of drives that it sells. The other component of the Disk Tools disk is the Disk First Aid utility, which works with non-Apple drives, if they follow Apple's partition structure. But that means that drives formatted with La Cie Silverlining, for example, can't be checked. It doesn't make much difference, though, since Disk First Aid has limited recovery options.—Ed.

ONE EXTENSION MANAGER YOU overlooked is the shareware utility Symbionts, which goes several steps beyond Extensions Manager. Symbionts works like Extensions Manager (moving stuff from one folder to another) but it has a much nicer interface (System 6 control-panel–style). You can also throw away extensions and save frequently used sets of extensions.

Greg Scarich
via the Internet

WHEN INSTALLING A NEW SYSTEM Folder on your Mac, don't overlook the Scrapbook file, especially if you keep important artwork or other clips



WARD SCHUMAKER

there. Too many times, I have replaced all my other INITs and preference files and forgotten about my Scrapbook.

Mark Foster
Asuza, California

Barbarians at the Gate

STEVEN LEVY, I ENJOYED YOUR article about Apple and the Internet (*The Iconoclast*, March 1994). We seem to be in similar situations. After an extremely trying period that spanned about two weeks, I'm finally up and running with a TCP/PPP account. What a nightmare!

Your idea of Apple supplying a built-in interface to the Net sounds great. The only problem I see with the proliferation of recent Internet activity is that logjams have resulted. I often have Archie requests turned down because of overburdened systems at host FTP sites. If every Joe with a Mac has easy access to the Net, won't the system become overloaded? A lot of these sites have "real" work to do. I'm surprised I haven't seen more people addressing this issue.

If Apple opens the floodgates to the Net as you suggest, it may be saddled with the demise of the Net as a useful research and academic tool, rather than hailed as a champion of the common weal. I don't believe the system can handle the load.

Bruce MacLeod
via America Online

Heart Attack

I READ WITH INTEREST IN THE APRIL 1994 issue of *Macworld* a review of Caduceus Science Review Macintosh Project 1.0. The review shows a Caduceus diagram of a heart that grossly and erroneously misidentifies the left ventricle as the left atrium. The reviewer points out that there are a "few incorrect explanations." Such an obvious and simplistic error does not bode well for premed students using the program to bone up on their skills for the MCAT test.

Timothy Dickinson
Henderson, Nevada

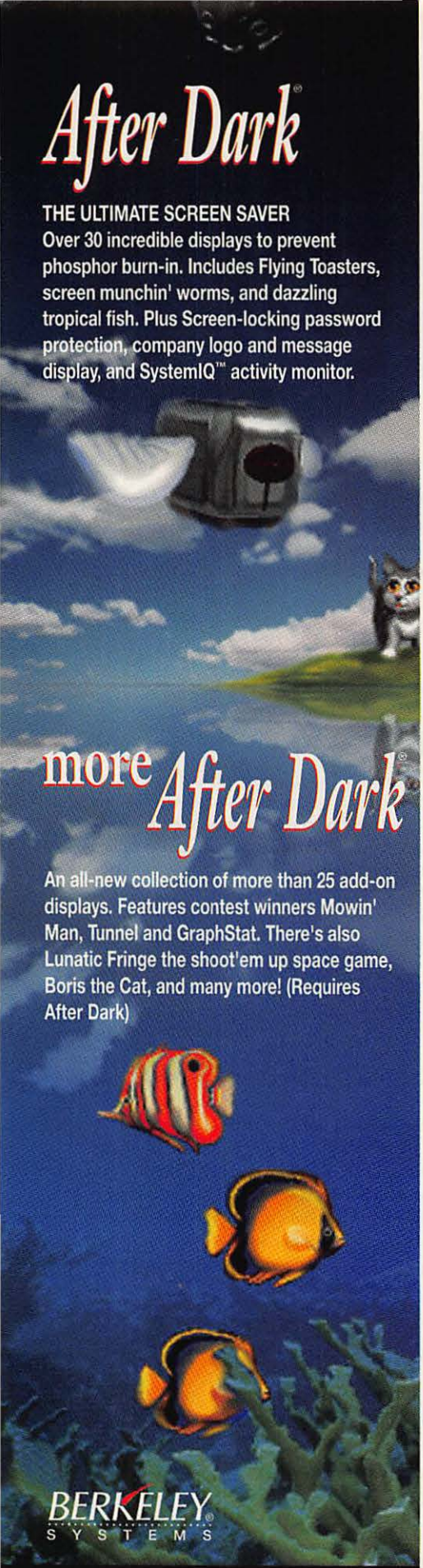
Actually, I meant to showcase the misspelling *deoxyginated* in the diagram's text, and the atrium/ventricle problem was just a bonus. Caduceus Project actually goes through a rigorous proofreading cycle (the mistakes in this figure were corrected within a few weeks of release), but *Macworld* got one of the first 100 disks in the production run for review. Version 1.05 is currently shipping, and the vendor has cleared up nearly all the problems I found in the earlier version.—Charles Seiter

April What?

AM I THE ONLY ONE WHO, AFTER reading Lon Poole's April *Quick Tips*, immediately powered up their Mac and performed the four-corners–plus–option-P-R-O routine?

Imagine my shock when my Mac icon darkened and the coveted word *Pro* appeared after the model name, just like Lon said it might! My Mac seems to run only three times as fast, not the four times

continues



CORRECTIONS

- *Since "The Power Macintosh Arrives" was written, Apple has changed some information that we ran in that feature's "Making AV Technology Mainstream" sidebar (May 1994). To get the Express Modem software, you need to buy a GeoPort telecom adapter. Also, to get the PlainTalk software, you must either purchase an AV model or buy the software separately.*
- *Contrary to the May 1994* New Products *report, Sonnet Technologies' BudgetBooster does not support the Color Classic, and the LC version of the card has a 25MHz 68020 chip.*
- *Graphisoft's PowerPC upgrade offer for ArchiCAD has some caveats not reported in our April 1994 "PowerPC Apps" item in* PowerPC News. *The plan is limited to customers who bought the software between October 1, 1993, and January 31, 1994, and also paid $95 for the upgrade plan.*
- *The May 1994 review of Connectix's RAM Doubler 1.0.1 should have mentioned that the software is compatible with System 6.0.5.*
- *In the April 1994 review of the LaserWriter Select 360, two printer names were transposed. We should have said that the LaserWriter Select 360's output doesn't look as crisp as that of the LaserJet 4M with Resolution Enhancement technology. The change does not affect our evaluation or rating.*
- *Also in April* Reviews, *Passport Producer Pro's Cons should not have included the word* expensive. *This would not have changed the rating.*
- *The correct number for ordering TouchBase and DateBook is 800/888-6293 (*At Work *news, May 1994).*
- *In the May feature "Smart Thinking," Inspiration was incorrectly criticized as being unable to import files created with other applications. In fact it can import text files and More files.*
- *Microtek's phone number is 310/297-5000 (*Graphics *news, June).*

Lon promised, but that's all right. What else would one expect from a 1-in-10,000 shot at perfection?

My only problem is deciding whether to keep my Mac Pro, offer it for sale to Lon at a high premium, or read his entire column next time before rushing off to try his tips and tricks. Do you have any suggestions? Oh, and by the way, where can I buy that ADB booster?

Mike Morris
Trabuco Canyon, California

Darn it, Mike, we just ran out of ADB Power Booster 1000s. But hold on, you're in luck—we've got this here bridge in San Francisco that's for sale. What? You say that you don't own a major body of water? Well, for just a few dollars more, we'll throw in your very own bay. It just so happens we have one available. Call now, operators are standing by.—Ed.

Off-Price Monitors Might Work

IN YOUR JANUARY 1994 ARTICLE ON monitors ("Small Wonders"), you reviewed only the plug-and-play VGA monitors. While this avoids the possibility of buying an incompatible monitor, it also makes for expensive purchases. It's possible to buy a monitor with .28mm dot pitch, noninterlaced 60Hz refresh, and good color convergence for about $270 including an adapter. My monitor works with my Quadra 610's internal video, providing 16-bit color at SVGA resolution. It also offers on-the-fly hardware zooming and color filters, which I don't believe any of the reviewed monitors can do.

I realize that your lab doesn't have the time to test every monitor, and your magazine doesn't have the space to list the results of all of those tests. But a recommendation to visit the computer swap meets and trade shows (especially the PC ones)—where monitors range from $200 to $300—could save your readers hundreds of dollars.

Gabriel Rossman
via America Online

You can buy PC monitor adapters for $10 to $30 at Radio Shack, Fry's, CompUSA, and other electronics stores. The adapters are usually labeled for use with a specific major brand (typically Sony or NEC), but they'll work with most VGA monitors. However, there's no guarantee that an adapter will work if the monitor maker has done something nonstandard. We've said in previous monitor articles that this is an option you should consider; just be sure you can return the monitor if the company has no adapter of its own.—Ed.

Speedy LaserWriter Plus

FEBRUARY'S *MACWORLD* REVIEWED "high-speed" workgroup printers, most costing several thousand dollars ("Workgroup Printers"). One of the speed tests used a 20-page Word 5.0 document composed in 12-point Courier with three type styles. Apple's latest PostScript Level 2 driver (LaserWriter 8.1.1) prints such a document on a seven-year-old LaserWriter Plus in 175 seconds.

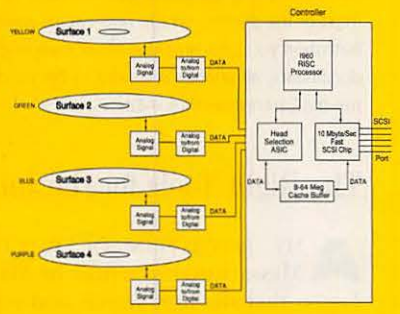
continues

VIDEO STORAGE.

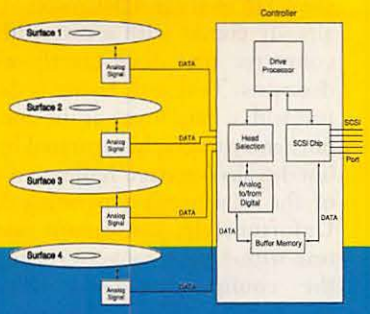
Orray™ OPTICAL DISK DRIVE - 5.2GB

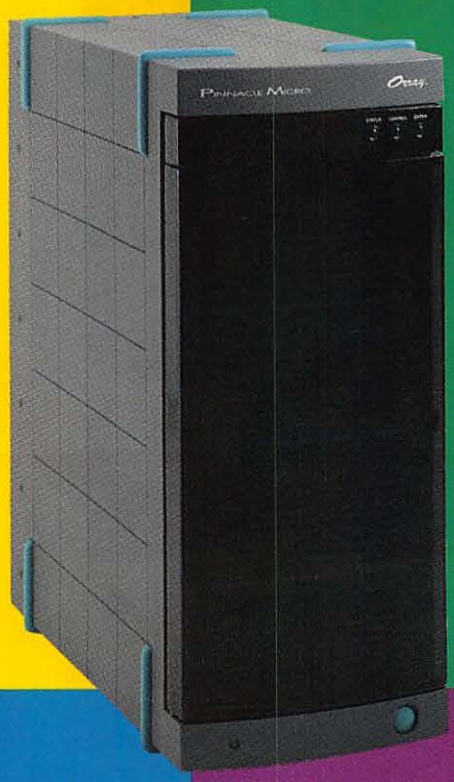
8 MB/Sec Data Throughput

Orray Architecture
Optical Disk Drive



Hard Disk Architecture





FEATURES

- Patented multi-head/multi-channel architecture
- High sustained data rates
- Multi-parallel RISC processor system with 100 MHz of processing power
- Intelligent FAST SCSI II processor
- System appears as a standard SCSI direct access drive
- Flash EPROM for on-site firmware upgrades
- Inexpensive removable optical media sets
- Front panel display and key pad for diagnostics and device settings
- Plug and play for MAC, PC, Sun, HP, Silicon Graphics and others

Pinnacle introduces a new storage system designed especially for digital video.

The Pinnacle Orray™ is the world's first optical drive system to utilize multiple heads and multiple disks – similar to hard disk technology. The Orray™ can perform as fast as most hard disk drives, with the added benefit of removable, reliable, inexpensive optical media.

The Pinnacle Orray™ with its Patent Pending multi-disk/ multi-channel architecture offers sustained transfer rates up to 8MB per second.



Each color-coded media set holds up to 5.2GB of data – perfect for most video production needs.

The versatility of the Pinnacle Orray™, with its intelligent RISC processor controller, allows for operation in multiple environments. In *streaming mode* the Orray™ can be used for digital video or audio. In *transaction mode* the Orray™ can be used as a file server or database storage system. All settings including operational modes, SCSI addresses, and status indicators are controlled and viewed from a front panel LED for easy access and identification.



The Pinnacle Orray™ is the most advanced storage system available today. It's the ultimate in unlimited storage. For more information call:

800.553.7070

PINNACLE MICRO
THE OPTICAL STORAGE COMPANY®

19 TECHNOLOGY • IRVINE, CA 92718, USA • (800) 553-7070 • INT'L (714) 727-3300 • FAX (714) 727-1913

Trademarks: Orray of Pinnacle Micro, Inc. All trademarks and registered marks to their respective owners.

Circle 115 on reader service card

UNFORGETTABLE.

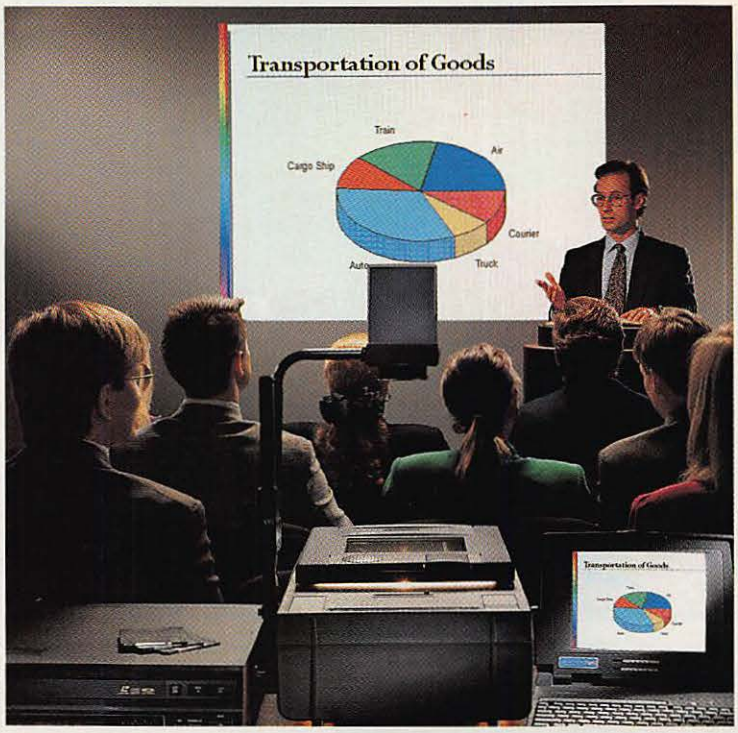


Image shown is an actual nVIEW LCD image.

THE *n*VIEW® Z SERIES.

They won't forget your message. You won't forget the applause. Project your next presentation directly from your computer in big, bold color images with *n*VIEW's new line of LCD projection panels.

Sleek, feather-light panels that are so easy to use, yet so durable, you can deliver presentations anywhere, anytime. With impact.



All-in-one projection panels are easy to setup with built-in audio, unique Presentation Control and the versatility to connect up to four sources simultaneously.

See it. Hear it. Feel it. Unforgettable presentations everytime.

Enjoy the applause!

For more information call **1-800-736-8439** or **804-873-1354**.

*n*VIEW
VISIONARY DISPLAY TECHNOLOGIES

nVIEW products are manufactured under U.S. Patent #4,763,993; #4,976,536; #5,153,621; #5,150,238; #5,277,871; and 5,255,029. Other and foreign patents pending. nVIEW and ViewFrame are registered trademarks and MediaPro, Luminator and nSIGHT are trademarks of nVIEW Corporation.

Circle 117 on reader service card

Put Our List On Your List

Our list is the *Consumer Information Catalog*. It's free and lists more than 200 helpful government booklets. So send for the free *Catalog*. It's the thing to do. Write:

Consumer Information Center, Dept. LL, Pueblo, CO 81009

A public service of this publication and the Consumer Information Center of the U.S. General Services Administration

This is comparable to 6 of the 12 printers tested by *Macworld*, when printing at 300 dpi. Before you buy a new printer, make sure you have given your old printer a fair chance with the newest software.

Gerald Wright
Portola Valley, California

It's true that the LaserWriter Plus uses an 8-pages-per-minute engine, and it has the same speed as most of the printers on the raw-engine-speed test. But when you print anything other than single-font documents, all printers reviewed in the article outrun the LaserWriter Plus.—Ed.

The Right Tools for the Job

AMY ROTHSTEIN OF WALTHAM, Massachusetts, writes in March's *Letters* that she uses search-and-replace techniques in Microsoft Word to massage files obtained from online services. Maybe she is not aware that Microsoft Word 5.X already comes with a text-with-layout converter that does exactly what she describes. Text with layout is defined as text with a hard break at the end of each line, and paragraphs separated by double line-breaks (carriage returns, in the case of the Macintosh Operating System). Unfortunately, you cannot install this text-with-layout converter using any of the configuration sets offered by Microsoft Word's installation script. You need to install it using the custom install features of the script. After you install the converter, a dialog box asking you to choose between plain text and text with layout appears every time you open a text file with Microsoft Word.

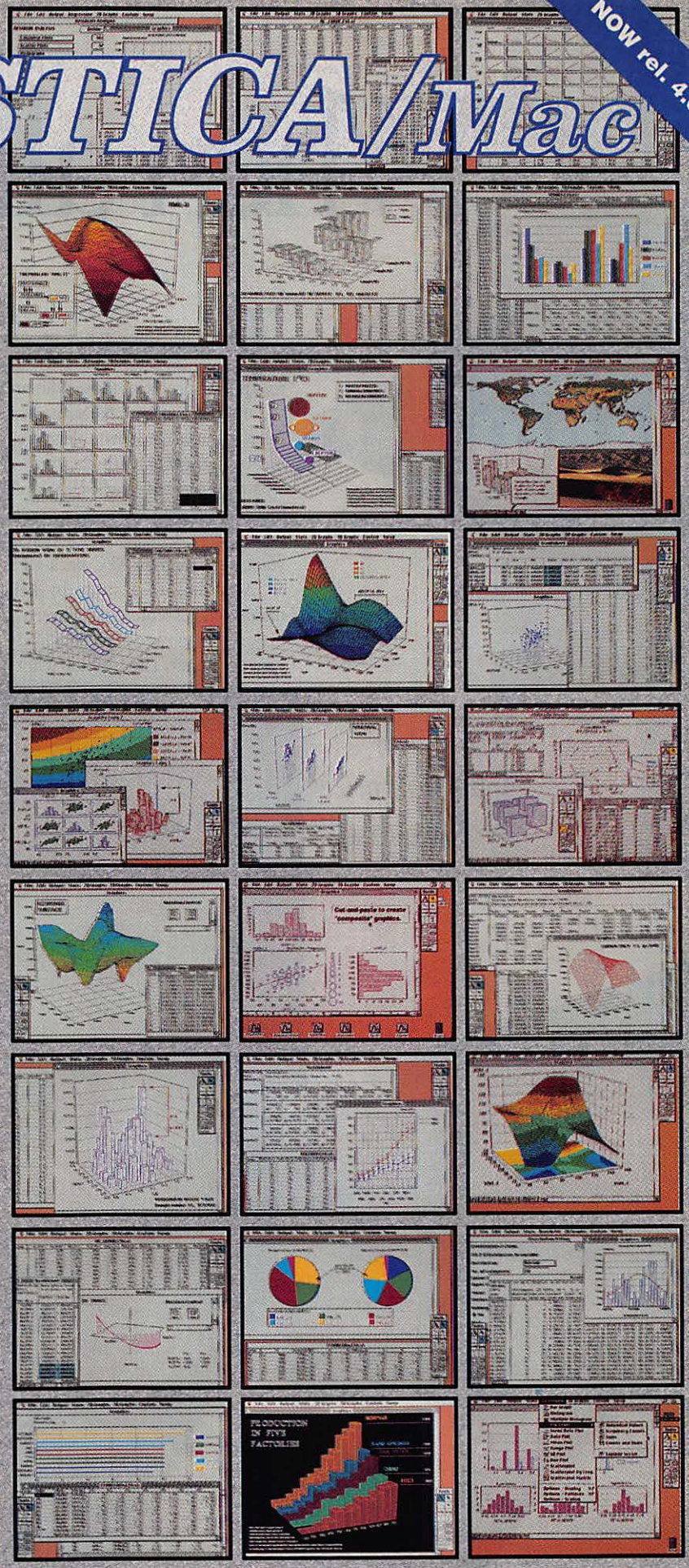
If you want a user-friendly utility for more-sophisticated text processing, I would recommend the shareware Add/Strip 3.0.3; or you can choose among at least eight or ten other freeware and shareware programs that give you better results, more speed, and less frustration than using search-and-replace in your word processor to preprocess your downloaded text files.

Pedro A. Lopez-Valencia
Washington, D.C.

Letters should be sent to *Letters, Macworld*, 501 Second St., San Francisco, CA 94107; via fax, 415/442-0766; or electronically, to CompuServe (70370,702), MCI Mail (294-8078), America Online (Macworld), or AppleLink (Macworld1), or via Internet (70370.702@compuserve.com). Include return address and daytime phone number. Due to the high volume of mail received, we can't respond personally to each letter. We reserve the right to edit all letters. All published letters become the property of *Macworld*. m

STATISTICA/Mac

NOW rel. 4.0



STATISTICA/Mac™ A complete statistical data analysis system with hundreds of presentation-quality graphs integrated with all procedures ■ In-depth, comprehensive implementations of: *Exploratory techniques; Descriptive statistics; Frequency tables; Large selection of nonparametric tests; Stepwise multiple regression methods with extended diagnostics; General nonlinear estimation (with predefined or user-specified models); Logit/Probit analysis; General implementation of ANOVA/ANCOVA/MANOVA/MANCOVA (designs of practically unlimited complexity, repeated, nested, incomplete, random, changing covariates, contrast analyses, post-hoc tests, custom designs); Stepwise discriminant function analysis; Canonical analysis; Large selection of time series modeling techniques with forecasting; Factor analysis; Cluster analysis (incl. hierarchical, k-means, and 2-way joining); Reliability/Item analysis; Log-linear analysis; General survival/failure time analysis (incl. life tables, group comparisons, and regression models); Distribution fitting (a large selection of continuous and discrete distributions); Curve and surface fitting and smoothing (incl. spline, DWLS, NEXP, and others);* and much more ■ Manual with comprehensive introductions to each method and step-by-step examples (Quick Reference booklet explains all major conventions); balloon help ■ Extensive data management facilities: a super-fast spreadsheet of unlimited capacity with formulas (and *Publish and Subscribe*); merge/split files; "double identity" of values (numeric/text); BASIC-like data transformation programming language; Import/Export data and graphs from Excel, STATISTICA/w and other formats ■ Graphs integrated with all procedures (e.g., click on a correlation coefficient to produce the corresponding scatterplot and other graphs; click on a variable in the descriptive statistics table to produce a histogram and other graphs; click on an interaction effect in the ANOVA table to see a plot of interaction) ■ Large selection of 2-dimensional graphs: *Histograms (incl. multiple, clustered breakdowns, overlaid functions), Scatterplots (incl. multiple, weighted frequency, smoothed, function fitting), Multiple line and Range plots, Trend plots, Standard deviation plots, Data sequence diagrams, Contour plots, Box-and-whisker plots, Column plots, Bar graphs, Double pie charts, Scrollable dendrograms, Two-way joining plots, Curve fitting plots, Distribution comparison plots, Range plots, Probability plots, Amalgamation plots, Factor space plots, Casewise outlier and residual diagrams, ANOVA interaction plots, Multivariate (multiple) matrix plots, exploratory Draftsman plots with histograms, categorized (multiple) graphs,* and many other specialized plots ■ Large selection of 3-dimensional graphs: *3D surface plots (with data smoothing procedures, color or gray-scale shading, and projected contours), 3D scatterplots, 3D block scatterplots, 3D axis (space) plots, 3D spectral plots with adjustable planes, 3D line/ribbon plots, 3D sequence block plots, 3D histograms, 3D surface-smoothed frequency plots, and 3D range plots ("flying boxes")* ■ All 3D plots displayed in true perspective, feature interactive real-time rotation facilities (incl. continuous rotation) ■ Extensive graph customization options: all structural aspects of graphs (axes, scaling, patterns, colors, sizes, styles, regions, perspective, rotation, fitted functions, etc.); MacDraw-style tools with specialized "objects;" hi-res. graph and artwork embedding; page layout/preview; dynamic rulers ■ All output displayed in Scrollsheets™ (dynamic, internally scrollable tables: all numbers can be instantly converted into a variety of on-screen customizable, presentation-quality graphs) ■ All contents of Scrollsheets can be saved as data and used for input, or be exported ■ Flexible facilities to perform analyses on specific subsets of data ■ Extremely large analysis designs ■ Unlimited size of files ■ Extended precision ■ Unmatched speed (e.g., on a Mac IIfx, arbitrary rotation of a surface with 1000 points takes 1 second; correlation matrix 50x50 with 100 cases—less than 3 seconds; transposing a 5000 data points file—less than 2 seconds) ■ Full support for System 7 ("savvy") incl. *Publish and Subscribe,* Apple events, balloon help, "drag and drop," 32-bit, etc. ■ Price: **$695.**

Quick STATISTICA/Mac™ A subset of STATISTICA/Mac ■ All basic statistical modules of STATISTICA/Mac *(Basic and Descriptive Statistics, Frequency tables, Exploratory data analysis, Nonparametrics, Distribution Fitting, Stepwise multiple regression; ANOVA/ANCOVA)* ■ Manual with comprehensive introductions to each method and step-by-step examples (Quick Reference booklet explains all major conventions) ■ All data management facilities of STATISTICA/Mac (including interactive rotation of all 3D graphs, extensive on-screen graph customization facilities) ■ Price: **$395.**

Windows versions also available (can exchange data with Macintosh versions): STATISTICA/w™ **$995**; Quick STATISTICA/w™ **$495.**

Domestic sh/h $10 per product; please specify type of computer with order; 14-day money-back guarantee.

Circle 99 on reader service card

StatSoft™

2325 E. 13th St. • Tulsa, OK 74104 • (918) 583-4149
Fax: (918) 583-4376

Overseas Offices: StatSoft of Europe (Hamburg, FRG), ph: 040/4200347, fax: 040/4911310; **StatSoft UK** (London, UK), ph: 0462/482822, fax: 0462/482855; StatSoft Pacific (Melbourne, Australia), ph: (03) 663 6580, fax: (03) 663 6117; **StatSoft Canada-CCO** (Ontario), ph: 905-849-0737, fax: 905-849-018; **StatSoft France** (Paris), ph: (1) 45 66 97 00, fax: (1) 45 66 06 51; Available from other Authorized Representatives worldwide: Sweden: AkademiData Scientific AB ph: 018-210035, fax: 018-210039; Finland: Statcon Oy ph: 24-334678, fax: 24-333867; Belgium: Texma Newtech 10 61 16 28; South Africa: Osiris Technical Systems 12-663-4500; Japan (Macintosh): Three's Company, Inc., 03-3770-7600; Japan (Windows): Design Technologies, Inc., 03-3667-1110.

StatSoft, STATISTICA/Mac, Quick STATISTICA/Mac, STATISTICA/w, Quick STATISTICA/w, and Scrollsheet are trademarks of StatSoft, Inc.; Macintosh, Mac IIfx, Excel and MacDraw are trademarks of their respective companies.

When all else fails,

Starting at $139!

There are three types of computer users: those who have lost data due to a power problem, those who are going to, and those who have protected themselves against the inevitable surge, blackout or brownout with the most reliable UPS they can buy: Back-UPS by APC. In fact, editors and users alike agree that if your system demands absolute reliability, you can depend on APC Back-UPS.

According to a study by Bell Labs, undervoltages represent the overwhelming majority of power problems likely to hit your computer. The question is not if a failure will occur, but when. Whether due to construction, wiring, weather, other office equipment, or accidents, power problems are as inevitable as death and taxes. That's why you need instantaneous battery backup power from the Back-UPS to prevent data loss, hard disk crashes, and hardware damage.

If you're concerned about lightning, rest assured that when measured using the ANSI/IEEE 587 Category A test wave, Back-UPS are superior to

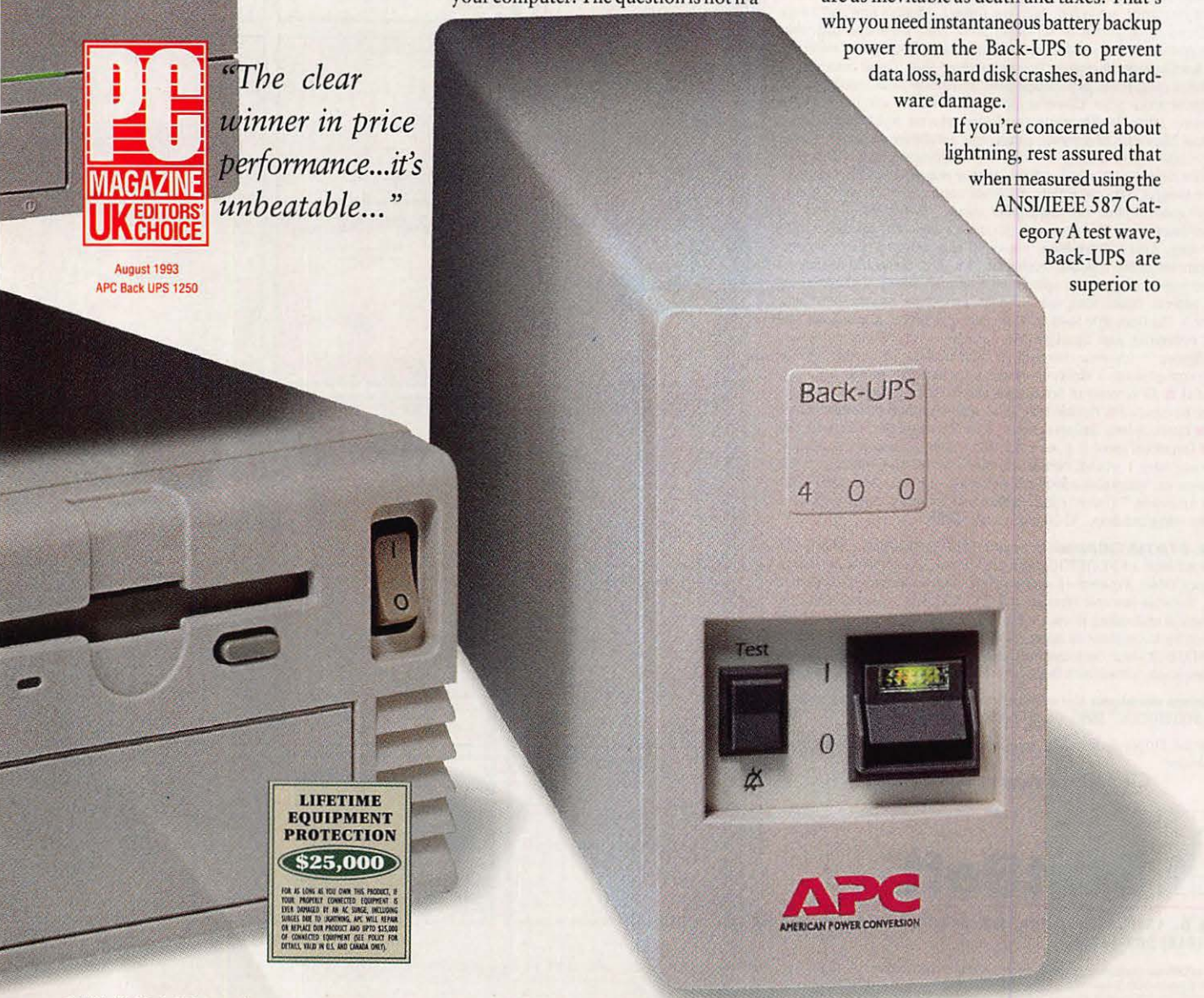
APC Voted most reliable by 3-to-1
Tripp
Best
PC MAGAZINE

In a recent poll by PC Magazine's *MagNet, APC was voted the most reliable UPS manufacturer by a 3-to-1 margin. That's dependability that will see you though years of unmatched power protection.*

PC MAGAZINE UK EDITORS' CHOICE

"The clear winner in price performance...it's unbeatable..."

August 1993
APC Back UPS 1250



© 1994, APC. Back-UPS, PowerChute are trademarks of APC. Other trademarks are the property of their owners. Specs subject to change without notice.

Back-UPS® prevail



"All other brands of UPS die regularly in this lightning prone environment. My APC won't die!" said Paul Sisilli, Systems Analyst, City of Port St. Lucie . "With other brands, users don't find out until it is too late. The power interruptions here are very hard to live with. The other brands are dying off. Typically they last just beyond their warranty period. My Back-UPS is going on three years...no other brand is as reliable."



Don Traux knows first hand about Back-UPS reliability: "It ought to be against the law to buy a computer without an APC Back-UPS 250. I recently had a direct lightning hit right outside the house...my computer never blinked. Each morning I get a surge down the line and both APC's hate it - they simultaneously 'holler 'n clamp' while my 'Brand T' quietly sleeps in. I've relegated that unit to non-critical household stuff like my VCR."



Andrew Wargo, Manager at Baxter Land Company, tried two other brands before Back-UPS. "One lasted a few days, a second one went up in smoke after 48 hours, a third lasted less than 24 hours! I then bought my Back-UPS for less than half of what I had paid for the others. We've purchased three more Back-UPS and for the past 14 months they've been just hummin' away on the same power line that was eating the other brands alive!"

virtually all separate surge suppressors. Surge performance is even backed by a $25,000 Lifetime Equipment Protection Guarantee.

If you're protecting a network server, a communications interface port (on models Back-UPS 400 and higher) provides the security of an automatic shutdown to all major OS including NetWare, Windows, Windows NT, LAN Server, LAN Manager, LANtastic, SCO Unix, OS/2, Banyan Vines, AppleShare/System7 and more, so your data is safe whether the system is attended or not. (PowerChute software and interface kits sold separately.)

MADE IN

And since data processed on networked clients needs protection too, the $139 Back-UPS 250 provides an economical solution for all your LAN workstations.



Back-UPS (R to L)	Application	Sugg. List
250	LAN nodes, internet hardware, POS	$139
400	Desktop 486, 386 systems, servers	$229
450	Tower 486, 386 systems, servers	$279
600	Heavily configured systems, CAD/CAM workstations	$399
900	Multiple systems, longer runtime applications	$599
1250	Multiple systems, LAN hubs, small minis, telecom equipment	$799



APC has won more awards for performance and reliability than all other UPS vendors combined...including four consecutive LAN Times *Readers Choice awards...*

PC World Top 20 Upgrade · Windows Mag. Readers Choice · LAN TIMES READERS CHOICE · Corporate Reseller News Editors' Choice

Discovering how essential Back-UPS protection is can be hard...if you wait for the next storm to roll through. But discovering how afforable it has become is easy...

Call today and find out (the easy way) why more than 1,000,000 satisfied users bank on Back-UPS from APC. With more awards than all other brands combined, field-proven reliability, and a two year warranty, Back-UPS are power protection you can purchase with confidence.

Microsoft Windows Compatible · yes NetWare Tested and Approved · ARTISOFT LANtastic · SCO OK · Available and Ready for LAN Server · Solaris Compatible

AWARD-WINNING FEATURES

Instantaneous ***backup power*** *beats blackouts and brownouts*

Unmatched lightning (tested to UL1449) and ***surge protection*** *for maximum hardware safety*

Network-grade ***line conditioning*** *and* ***EMI/RFI filters*** *prevent glitches*

LAN Interface *(on Back-UPS 400 and up) provides automatic shutdown to all major OS: Windows, NT, NetWare, LAN Server, LAN Manager, LANtastic, Unix, OS/2, Vines, AppleShare/System7 and more.*

Site diagnostics *automatically spot missing ground and reversed polarity, two common miswirings which usually require an electrician's visit to diagnose.*

Option switches *allow you to customize transfer voltage and alarm settings.*

Test Switch *for ongoing peace of mind*

2 year warranty *and* ***full safety approvals***

$25,000 Lifetime Equipment Protection

APC™

AMERICAN POWER CONVERSION

PowerFax Info (800)347-FAXX

800-800-4APC

APC EUROPE (+33) 64625900 / ASIA/PACIFIC FAX: 401-789-1631 / L. AMERICA FAX: 401-789-9771 / Compuserve: GO APCSUPPORT

Dept. D7

Circle 72 on reader service card

We've built our reputation on professional publishers from around the world.

When it comes to plain-paper typesetting, LaserMaster's® users really pile up! Every professional knows the physical appearance of their work is a direct reflection of their personal performance. That's why professionals who want to look their best choose LaserMaster.

Oversized Typesetting

The Unity™ 1200XL-O offers all the features you'll need to get the job done right. Its 12"x19" paper support lets you print 11"x17" documents with full bleeds, crop marks, and registration marks.

1200-dpi Camera-Ready Output

Unity products use LaserMaster's patented TurboRes® resolution-enhancement technology to give you precise, 1200-dpi, camera-ready output—the highest resolution possible on plain paper.



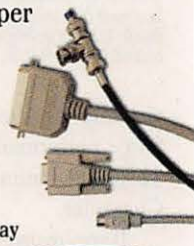
The Cost-Effective Choice

With LaserMaster's Unity line, you get quality output that's economical too. You'll find that Unity typesetters quickly pay for themselves. Unity's camera-ready pages only cost about 5 cents each. Compare that to the cost of imagesetter output that can cost as much as $9 a page.

TURBORES® FAST • LOW COST RECYCLABLE TYPESETTING

For More Information

Your work speaks for itself. Call now for more information and some actual output. LaserMaster is "The Professional's Choice™" for quality plain-paper typesetting.



OVERSIZED 12"x19"



Unity 1200XL-O Plain-Paper Typesetter

Features:	Benefits:
Oversized Typesetting	12x19-inch pages allow for full bleeds with crop marks and registration marks—eliminates paste-up, saves time and money.
1200-dpi Resolution	For camera-ready text, halftones, line art, reverses, and screens.
Internal Hard Drive	Stores thousands of fonts, eliminates font downloading.
Multi-Platform Networking	Mac, PC, and Unix users can all attach to the same printer.
235 Premium Type 1 Typefaces Pre-Installed	Provides high-quality typographic flexibility.
ClearCopy™ Copier Enhancement	Ensures halftones look crisp and clear after photocopying.
33-MHz Processor	Processes print jobs fast.
Gamma Correction	Adjusts images to compensate for dot gain on press.
Software Upgradable	Prevents obsolescence.
Direct-to-Plate Option	Provides a cost-effective solution for short print runs.
TurboGray™ Technology	Improves the appearance of halftone images.

Unity 1200XL-T Plain-Paper Typesetter

$6,995

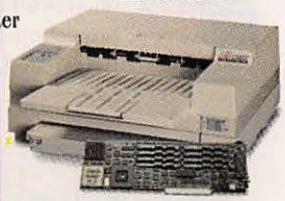
- Multi-platform, plug-and-play plain-paper typesetter for your Macintosh® or PC and most other computers
- 1200-dpi, camera-ready output
- 11"x17" paper handling (user upgradable to oversized 12"x19")
- 40-MB hard drive
- 135 premium Type 1 typefaces pre-installed



LaserMaster 1200XL Personal Typesetter

$4,995 Includes Rebate

- The incredibly affordable bus-based personal typesetter for your Macintosh or PC
- 1200-dpi, camera-ready output
- 11"x17" paper handling
- 135 premium Type 1 typefaces



LM® LASERMASTER®
TURBORES TYPESETTING DIVISION

The Professional's Choice™

CALL 800-950-6868

or 612-944-9330 Fax: 612-944-0522

DEPT 75Z

© 1994 LaserMaster Corporation, 6900 Shady Oak Road, Eden Prairie, MN 55344. LaserMaster, the LM logo, and TurboRes are registered trademarks; "The Professional's Choice," TurboGray, ClearCopy, and Unity are trademarks of LaserMaster. All other product or brand names are marks of their respective holders. These products incorporate TrueImage v.1 software with LaserMaster enhancements for performance and resolution. Specifications subject to change without notice. Prices in U.S. dollars and subject to change without notice. This ad was produced using a Unity 1200XL-O.

Circle 43 on reader service card

LATE-BREAKING NEWS

MacBulletin

Aldus Ships PageMaker for Power Macs The eagerly awaited PageMaker 5.0 for Power Macintosh is now shipping from Aldus. The $895 Power Mac native version runs two to four times as fast as the existing PageMaker 5.0 does on the fastest 68040-based Macintosh, according to Aldus. Current owners of PageMaker 5.0 can upgrade for $179; owners of older versions can upgrade for $299. Aldus, 206/622-5500, 800/685-3543.

Quadra 605 Cheaper Apple has reduced its suggested price for the 8/160 version of the Quadra 605 (without monitor or keyboard) by $200, to $1069. The 25MHz 68LC040-powered computer also now comes in two Business Productivity Solution configurations: a 4/160 model priced at $1019, and an 8/250 version priced at $1329. Both business setups ship with eight productivity software packages, including Claris's ClarisWorks, Intuit's Quicken, Gold Disk's Astound, and Full Contact from FIT Software. Apple Computer, 408/996-1010, 800/776-2333.

Apple Hard Drives La Cie and Apple announced that La Cie will make and sell external hard drives under Apple's name. Apple is expected to bundle the external drives with some of its computers. Designed by Apple, the Apple External Hard Drive comes in capacities of 160MB, 230MB, 500MB, and 1GB and lists for $389, $479, $829, and $1299, respectively. Available now, the drives will be supported by both Apple and La Cie. La Cie, 503/520-9000, 800/999-0499.

Motorola Ships PowerPC 603 Motorola has begun shipping small quantities of the PowerPC 603 chip, which Apple is expected to use as the brains of low-end desktop and portable Power Macs.

Apple's Competitive Trade-in Program A trade-in program recently established by Apple allows end users to trade in name-brand personal computers and equipment for credit toward the purchase of new Apple equipment. Set up in conjunction with Micro Exchange, which deals in used systems, the program accepts systems, printers, or monitors bearing brand names including IBM, Compaq, Hewlett-Packard, Macintosh, and others. To locate the nearest participating Apple reseller, call 800/538-9696.

Altsys Sues Aldus Altsys, developer of FreeHand for Aldus, has filed suit against Aldus, claiming the proposed Aldus-Adobe merger violates an agreement between Altsys and Aldus that gives Aldus exclusive worldwide marketing rights to FreeHand. Meanwhile, Aldus and Adobe confirm that the Federal Trade Commission is continuing its investigation to ensure that the proposed merger does not create a monopoly.

Brøderbund and EA Merger Off Saying that their stock prices had changed and that they had reassessed the transaction, Brøderbund Software and Electronic Arts called off their previously announced merger. Brøderbund said it agreed to pay $10 million to EA as a result of the decision not to merge.

Reversals of Fortune Radius, SuperMac, and RasterOps have all announced their first quarterly results of the 1994 calendar year. On quarterly revenues of $43.2 million (up 40 percent from the same quarter last year), Radius's net income was $1.2 million, while SuperMac recorded a net loss of $1.3 million on quarterly revenues of $39.9 million (down 9 percent), and RasterOps posted a loss of $1.1 million on $19.4 million in quarterly revenues (down 23 percent). Last year at this time, Radius was facing a loss of $5.3 million, SuperMac was enjoying a $2.1 million operating profit, and RasterOps had just taken a net loss of $6 million, including restructuring costs of $6.7 million. m

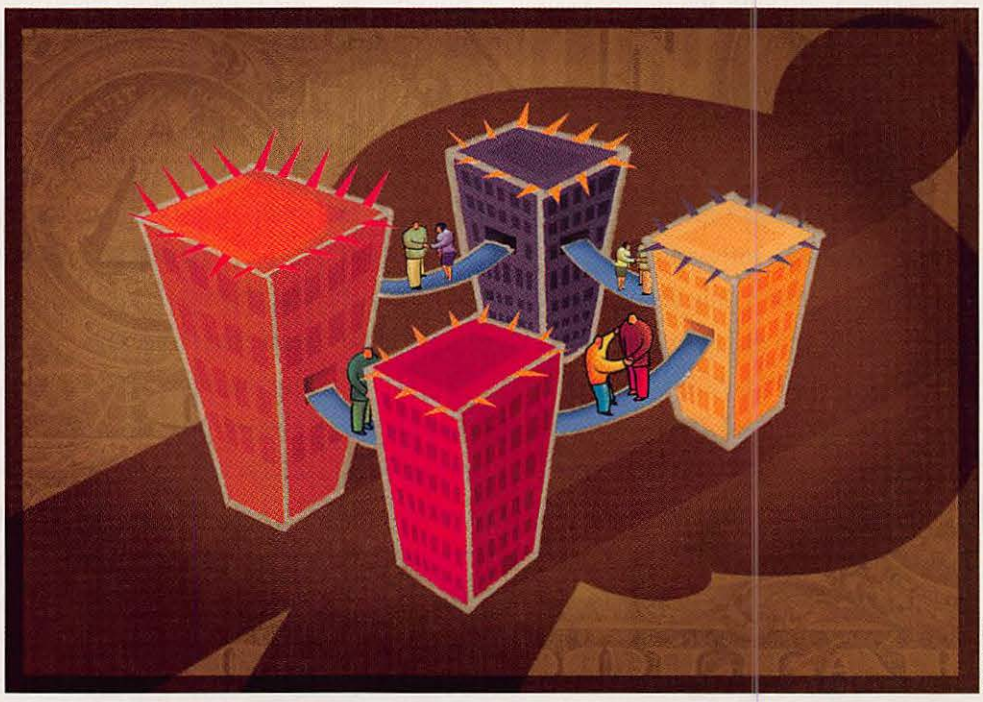
News

EDITED BY TOM MORAN

IN THIS ISSUE

p. 41 HP's Fast Laser **p. 41** Tech Support Costs Up **p. 42** V.34 Update
p. 42 Optical Jukeboxes **p. 42** Easy Internet
p. 43 4GB Hard Drive **p. 43** Light Utilities **p. 43** Bugs & Turkeys

Besieged Software Giants Join Forces



JOHN RITTER

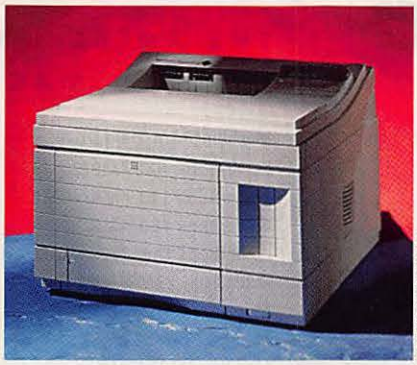
Cutthroat marketing competition, unrelenting pressure from Microsoft, and worries about companies' financial strength are causing an unprecedented wave of mergers in the software industry. In March, Adobe, home of PostScript and other publishing products, bought Aldus, the originator of PageMaker, for $525 million. Then Novell, the most successful networking company, acquired WordPerfect for $1.4 billion. Finally, on a smaller scale—for a mere $60 million—the software conglomerate Symantec acquired utility vendor Central Point in April, giving it a near-monopoly on commercial antivirus software. Officially, no one's actually buying anyone else; for tax purposes these are exchanges of stock for "pooling of interests." A casual observer, however, might be forgiven for calling up a mental picture of bigger fish eating smaller fish.

Is there a viable strategy behind these mergers, or is it simply a case of companies huddling together for warmth in the long, cold shadow of Microsoft? According to the companies involved, there are product-line reasons and financial reasons underlying these alliances. For example, Symantec, by merging with Central Point, has effectively swallowed its main utilities competitor. Aldus and Adobe emerge with a product line that covers almost everything that could be considered publishing, from electronic prepress to digital multimedia. The merger covers this field so thoroughly that some products of the new entity (Adobe Illustrator and Aldus FreeHand, Adobe Photoshop and Aldus PhotoStyler) will probably be seen as redundant, and some observers expect PhotoStyler and FreeHand to eventually disappear.

Novell has for years been the dominant force in networking but has been forced to watch program suites such as Microsoft Office and Lotus SmartSuite gobble up increasing shares of the corporate software market. This has left Novell watching from the sidelines as a major software profit center developed, while

also raising software-compatibility issues between NetWare and applications Novell can't control. The Novell-WordPerfect merger, which included licensing of Borland's QuattroPro spreadsheet and Paradox database to fill out Novell's office package, gets a Novell suite on the market that's guaranteed to run under NetWare, but it's both the riskiest and the highest-stakes business move by any of these companies from a product-development standpoint. Although Novell now has networking, E-mail, and a leading word processor that works on a large assortment of platforms, it's not clear that the Borland-derived products will give the suite the tight integration that is Microsoft Office's strong point.

The financial arguments for the mergers can be illustrated from the numbers for Adobe and Aldus. In 1993 Aldus had $206 million in sales and 1100 employees, and Adobe had $313 million in sales and 1000 employees. The merger's aim is probably a firm with at least $500 million in sales and about 1600 employees, a broader product line, and better net income per employee. To survive the price-cutting battles that have become a standard Microsoft tactic, and to please the financial analysts who influence stock prices, the newer set of numbers will be an absolute necessity. Look, in the short term anyway, for higher profits and fewer employees at the firms involved in all three mergers. Symantec's merger announcement, for example, contains a promise to downsize Central Point's operations from 280 to 100 employees, and similar cuts can be expected to follow at the other acquired firms. This round of mergers is likely to mean short-term reorganization of tech support, with free tech support starting to vanish in the face of diminished staffing, and an end to the last few years' price cuts, as bigger vendors buy out their competitors.—CHARLES SEITER



RICHARD RETHEMEYER

HP's LaserJet 4MPlus is a 600-dpi, 12-ppm laser printer designed for small workgroups in mixed environments.

HP Trumpets Faster LaserJet

PRINTS 12 PPM AT 600 DPI

Saying it intends to make 600-dpi printing at 12 ppm a new office standard, Hewlett-Packard has introduced the LaserJet 4MPlus laser printer for the Macintosh. The printer is designed to suit small workgroups in organizations of any size; it switches automatically between printer languages (PostScript Level 2 and HP PCL), I/O ports, and 12 different included network operating systems. Another new feature is dynamic I/O buffering, which means that when the user adds more RAM, the printer allocates more RAM to the print buffer. The printer comes with 6MB of RAM, expandable to 38MB, but that amount requires more-expensive 16MB SIMMs. For fast processing, the 4MPlus uses a 25MHz Intel RISC processor.

For paper handling, HP built in a 250-page paper tray and a 100-sheet multipurpose tray that can hold envelopes and letter-, legal-, and A4-size sheets. HP will offer several paper-handling options, including a duplexer, a 500-sheet paper bin, a 75-envelope feeder, and a 1000-sheet output stacker for those very long memos. The printer complies with the EPA's Energy Star guidelines for saving electricity and has a draft mode that uses less toner.

HP has added a Control Panel Lockout feature, which allows the user to add password protection to the printer. HP expected to ship the 4MPlus by the time you read this, at a suggested list price of $2479. The LaserJet 4MPlus comes with drivers for the Mac and Windows, and HP also introduced the LaserJet 4Plus, a similar printer for DOS machines. The new printers replace the LaserJet 4 and 4M. HP, 800/752-0900.—T.M.

Tech Support's Rising Price

AFTER DIALING, COUNT YOUR FINGERS

Talking to a live technical-support human is getting tougher, or at least more expensive. WordPerfect has announced that it is limiting live, toll-free tech support to six months after purchase for business applications, and three months after purchase for workgroup applications. After that, speaking to a live technician will cost $25 per incident or $2 a minute for business apps and $150 per

continues



HANK OSUNA

In Brief

Brainstorm to Support AE Customers

With Applied Engineering saying it is out of business, Brainstorm Products announced several assistance programs for AE customers. Brainstorm is offering those users free technical support on AOL and AppleLink. The company said it is also giving users $50 off the list price of a Brainstorm accelerator in trade-in for an AE accelerator card. Brainstorm is also offering a related program for AE dealers. 415/964-2131.

Multimedia Patent Ruled Invalid

The multimedia industry heaved a sigh of relief recently when the U.S. Patent Office overturned a patent on multimedia previously awarded to Compton's NewMedia. However, the Patent Office said it is possible that the patent could be reinstated at a later time.

DayStar Pares Processor Prices

DayStar has announced price cuts on most of its 040 processor upgrade boards. The 40MHz versions of both the Turbo and Value 040 now cost $1149, with 33MHz versions available for $949. All the Turbo and Value 040 upgrades now also ship with a 128K RAM cache. The price for the FastCache Quadra board for the Quadra 700 and 900 was also cut; it is now retailing for $199. 404/967-2077, 800/962-2077.

MultiSync Monitors Get Cheaper

NEC has cut the retail prices of its entire MultiSync monitor line by as much as 19 percent. You can now pick up a 15-inch 3V display for $495 (previously $550). The 21-inch MultiSync 6FGp monitor now sells for $2125, a drop of $410. 708/860-9500, 800/632-4636.

incident for workgroup software. State of the Art, an accounting software company, recently announced that it would provide customers with free tech support for 60 days after registering; the company simultaneously announced a $20-per-10-minutes rate for support after the 60-day period expires. Microsoft continues to offer unlimited live, toll-charge tech support, but antsy customers can now get faster access to techs by paying $39 a year for the Microsoft Plus program, although toll charges still apply. The program includes *Microsoft Plus*, the company's bimonthly customer-support magazine.

Macworld has previously reported on Claris Corporation's policy of unlimited calls for 90 days after the first call, Quark's policy of unlimited calls for 90 days after purchase, and Adobe's system of support credits (see *Conspicuous Consumer*, March 1994). WordPerfect, 801/255-5000, 800/451-5151; State of the Art, 714/753-1222, 800/690-5575; Microsoft, 206/882-8080, 800/426-9400; Claris, 408/727-8227, 800/544-8554; Quark, 303/894-8888, 800/676-4575; Adobe, 415/961-4400, 800/833-6687.

—CAMERON CROTTY

V.34 Upgrade Update

FASTER MODEMS ON THE WAY

With the V.34 (28.8-Kbps) modem standard entering final testing, the upgrade picture is slowly clearing. If you purchase a $599 Hayes Optima 288 V.FC for Macintosh fax modem, the upgrade to V.34 will be about $100. Supra said it expects to offer in September a $69 upgrade to its SupraFaxModem V.FC (estimated street price of $399). Starting December 1, the Supra upgrade price will drop to $49, until February 28, 1995. For either company's upgrade, customers send their units to the factory. Global Village Communication will not detail its plans beyond saying that it will support the V.34 protocol and that there will be an upgrade path for current Global Village customers. Finally, U.S. Robotics said that in June it will offer the V.34 upgrade free of charge to users of its Courier V.Fast Class modem. Currently, the modem supports both the V.32terbo and V.Fast Class protocols. Hayes, 404/441-1617; Supra, 503/967-2400, 800/967-8772; Global Village, 415/390-8200, 800/736-4821; U.S. Robotics, 708/982-5001, 800/342-5877.

—CAMERON CROTTY



ROBERT PERRY

U.S. Robotics will offer free V.34 upgrades for its Courier V.Fast Class modems.

THE AMCOEX INDEX OF USED MAC PRICES

Machine/RAM/Hard Drive	Average Sale Price	Monthly Change
PowerBook 100/4MB/20MB	$700	–$100
PowerBook 140/4MB/40MB	$1000	–$50
PowerBook 180/4MB/80MB	$1800	+$100
PowerBook Duo 230/4MB/80MB	$1100	–$100
Mac Classic/2MB/40MB	$425	$0
Mac SE/30/2MB/40MB	$600	+$25
Mac LC II/4MB/40MB	$500	–$25
Mac IIsi/3MB/40MB	$600	–$25
Mac IIci/4MB/80MB	$900	+$25
Mac IIfx/4MB/80MB	$1100	+$50
Centris 650/8MB/230MB	$1200	–$100
Quadra 900/8MB/160MB	$2300	–$100

Index provided by the American Computer Exchange of Atlanta, Georgia (800/786-0717). It reflects sales during the week of April 20. Configurations include keyboard and exclude monitor and display board for noncompact models.

TREND

Faster, Cheaper Optical Jukeboxes

ENORMOUS STORAGE

The optical-jukebox market may ignite if the on-demand video systems announced by Oracle and Microsoft are successful. Ultimately, jukeboxes will provide much of the permanent storage for vast video libraries. Right now, optical-disk libraries have found a niche among companies that need to archive graphics, sound, and financial data.

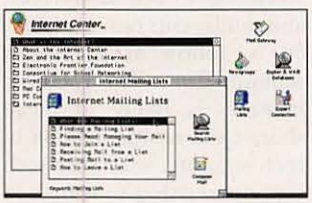
MaxOptix now offers four jukeboxes using its high-speed T3-1304 optical drive. The MaxLyb 6.5, at $6850, puts 6.5GB of storage in a desktop model for individuals and small workgroups. The $9950 MaxLyb 13 minitower and the floor-standing, $10,350 MaxLyb 26 are for small companies or departments. At $28,560, a 52GB model includes two optical drives. The drives support any 5.25-inch standard media up to 1.3GB. DOS/NetWare SCSI kits are available for each model.

The drives compete with Hewlett-Packard's optical jukeboxes. HP uses its own new 1.3GB optical drive, but the MaxLyb products yield better data-transfer rates at lower prices, according to MaxOptix. Both firms offer disk-management software from MacPeak and Software Architects. But HP's line focuses mostly on larger systems: it has 10GB and 20GB models, and then jumps to devices over 40GB. MaxOptix, 408/954-9700; HP, 800/826-4111.—TIM WARNER

AOL's Easy Internet

UNIX BE GONE

The Internet is, as has been widely reported, the world's greatest distributed E-mail system and a rich source of all sorts of information. Since general public interest in the Internet is only a year or so old, most people don't realize that the "native mode" of Internet operations is a fairly cryptic set of Unix commands. Simply trying to read an elec-



AOL's interface to the Internet has had Easy E-mail since February. Access to Usenet newsgroups, the Gopher, and WAIS search utilities are under way.

tronic-mail message at a standard Internet site can be enough to reduce a Macintosh user to tears.

Various vendors are attempting to bring the Internet to the masses via an assortment of national online services, and America Online has taken an early lead in smoothing Internet access for Macintosh users. E-mail is now respectably simple, with plenty of online help—you too can now voice your opinions to president@whitehouse.gov. E-mail, however, is just part of the Internet picture (it's what old-timers call limited access). The next step is the implementation of news filtering, in which a user files a set of keywords and the system flags and forwards the selected news items to the user's file. Finally, AOL proposes to have a real point-and-click interface with full Internet access by summer, enabling users to search remote databases, perform intrasystem file transfers, and log in to remote sites. America Online, 703/448-8700.—CHARLES SEITER



ROBERT PERRY

Quantum's Grand Prix 4280 hard drive stores 4GB of data and has an average access time under 9ms.

Quantum Spins Up 4GB

FAST 3.5-INCH GRAND PRIX HARD DRIVE

Prominent hard drive manufacturer Quantum Corporation has announced two fast, high-capacity 3.5-inch drives: the Grand Prix 2140 and Grand Prix 4280, which store 2GB and 4GB, respectively. Designed for data-hungry applications, such as multimedia, the Grand Prix drives have average seek times of 8.6ms and transfer data at 9.7MB per second, but when the Grand Prix uses a Fast Wide SCSI adapter (not included) the data-transfer rate can reach a blazing 20MBps, according to Quantum. Production quantities of the drives are slated to ship to hard drive vendors in the third quarter. List prices will be set by those vendors, who will integrate the drives into final products ranging from stand-alone devices to RAIDs.—T.M.

Light Utilities

SINGLE-MINDED SOFTWARE

Light Software has announced five utility software products that each do one thing and one thing only. Light Capture ($49) captures screens and saves them in various graphics formats. Light Paint ($79) offers basic and advanced painting tools, including support for Photoshop filters. Light Compress ($49) compresses files and decompresses DiskDoubler, AutoDoubler, and StuffIt files. Light Protect ($49) encrypts and password-protects files and folders. Finally, Light Shredder ($29) permanently erases data for increased security. These utilities require System 7, and many take advantage of recent Apple system enhancements such as QuickDraw GX, Easy Open, and the Drag Manager. All the utilities ship as fat-binary applications (compatible with PowerPC-based and 680X0-based Macs); Light Shredder and Light Capture are currently available from Light Software, while the rest are expected to come out in June. Light Software, 408/253-8721.
—CAMERON CROTTY

BUGS & TURKEYS

SoftKey International's KeyCAD 1.0 thoughtfully provides a predrawn library of PICT images, but if you attempt to check out any of the images, the application crashes. A free upgrade is available from the company by calling 404/428-0008.

OmniPage 3.1 and OmniPage Pro 2.1 optical character recognition applications aren't compatible with the Quadra 800 and 900. Caere says updated versions, OmniPage Pro 5.0 and OmniPage 5.0, will solve this problem and should ship by the end of May. Upgrade pricing was not set at press time.

The AppleCD 300i Plus, Apple's new CD-ROM drive with the autoloading tray, doesn't automatically eject CDs when you shut down or restart your computer. Worse, when the computer has started up again, the CD remains in the Mac but doesn't appear on the Mac's desktop. Pushing the eject button doesn't always help. Apple says to push the eject button when you see the Happy Mac screen during start-up, or stick a paper clip in the emergency eject hole.

Macworld will send you a Bug Report T-shirt if you are the first to inform us of a serious, reproducible bug that we report in this column, or a Turkey Shoot T-Shirt if we shoot your turkey in this space. See *How to Contact Macworld.*

In Brief

More Monitor Price Cuts

Mitsubishi has announced price reductions of up to 27 percent on its flat-square line of monitors. The DiamondScan 15FS now retails for $469 (formerly $645), the 17FS for $1069 (formerly $1299), and the 21FS for $2335 (formerly $2999). Mitsubishi has also announced its Corporate Spares program, which promises to provide a replacement monitor at a qualified customer's location within 48 hours of a reported failure. To qualify, you must purchase 50 or more Mitsubishi monitors during a three-month period. 714/220-2500, 800/828-6372.

Internet in a Box . . .

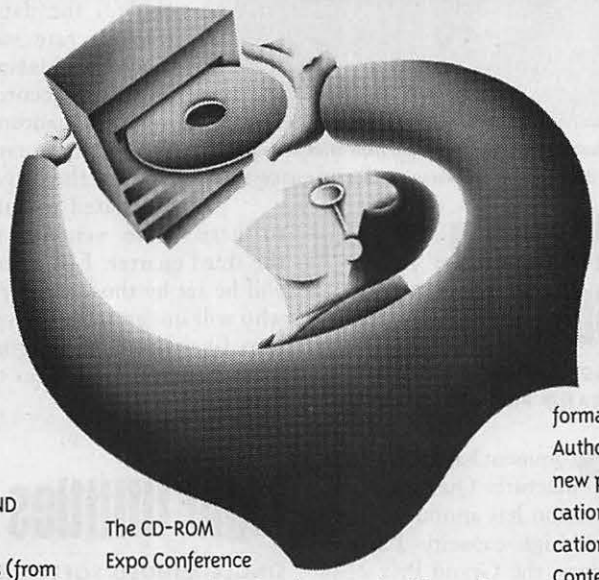
Spry Inc.'s Internet in a Box, a software-and-book combination expected to ship later this year and cost $100, has TCP/IP applications, including tools for FTP (file-transfer protocol), the Gopher file-transfer protocol, Telnet remote log-in software, mail, news, WAIS (Wide Area Information Server), and the Mosaic interface to multiple internet services. The software will act as a client to Internet service providers. The start-up and monthly fees are both $24.95, and the hourly rate is $10.95 at 14.4 Kbps. The package includes *The Whole Internet User's Guide and Catalog.* 206/447-0300.

. . . And Yet More Internet

Another product for simplifying Internet access is Global Network Navigator (GNN). The software sits on top of Mosaic and organizes a variety of Internet resources by category so the user can browse and double-click to get to a particular resource. GNN is made by O'Reilly & Associates, and it's available via FTP by sending E-mail toinfo@gnn.com. Also included with the software is an online version of *The Whole Internet User's Guide and Catalog.* NovX, 206/447-0800.

The 1994 CD-ROM Expo:
Profiting From Digital Publishing

October 5-7, 1994 • World Trade Center • Boston, MA



With The Endless Opportunities That CD-ROM Provides...

CORPORATIONS ARE SLASHING COSTS AND multiplying their profits with CD-ROM for advertising and sales presentations (from catalogs to kiosks), records management, technical product support, documentation, and training.

GOVERNMENT IS DRASTICALLY REDUCING the cost of printing, storage and distribution of databases via CD-ROM.

EDUCATORS — IN SCHOOLS, LIBRARIES, AND museums — are turning their analog assets into digital dollars.

THE PRINT-PUBLISHING INDUSTRY — including books, magazines, and newspapers — is expanding to profitable new horizons with CD-ROM's ability to capture and disseminate information at a fraction of historical print costs.

ENTERTAINMENT INDUSTRIES ARE PROFITING from an expanded ability to reach untapped audiences in the consumer market, thanks to CD-ROM technology.

The CD-ROM Expo Conference will feature first-hand success (and horror!) stories from all these communities, including valuable lessons learned in the production and marketing/distribution of CDs.

If You Would Like to Publish a CD...

Don't begin before you've learned how to enjoy the benefits while avoiding the pitfalls!

If You Are Publishing a CD...

Are you sure you're taking fullest advantage of the CD-ROM tools and techniques that can help you accomplish more in less time, with fewer complications, smaller margin for error, and greater opportunity for profit?

At the CD-ROM Expo Conference, You Can Learn About...

Successfully publishing and marketing a CD • Maximizing multimedia in CD-ROM production • Coping with multiple platforms and formats • Copyright and licensing issues • Authoring and development tools • Emerging new production techniques • Interactive application design • Networking multimedia applications • Text retrieval and development • Content asset management and exploitation • Strategies for defining markets • Industry trends and developments, including portable and wireless communications • Pricing/promotion/ advertising in new markets • Financing CD-ROM titles • New distribution channels • Creating/converting data to digital form • Transitioning from print and on-line to CD-ROM • Legislative initiatives • Where to find digital talent • In-house CD-ROM production and distribution vs. outside services • Using standard digital formats for different kinds of data... and more.

If You're Interested in CD-ROM Titles For Home, School, or Business Use . . .

The exhibit floor at CD-ROM Expo will dazzle you with a fabulous array of titles, bringing a universe of information, entertainment, and education to your desktop!

Yes, I'd like more information about the 8th annual CD-ROM Expo October 5-7, 1994, I'm interested in: ☐ exhibiting ☐ attending

NAME_____ TITLE_____

COMPANY_____

ADDRESS_____

CITY_____ STATE_____ ZIP_____

TELEPHONE_____ FAX_____

Send to: CD-ROM Expo '94, 260 Milton St., Dedham, MA 02026 or fax to: 617-361-3389

MACWORLD

THE STATE OF THE *Art.*




1
2
3
4
5
6
7
8

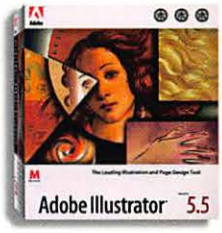
Here's what's going on in our head. Pencil sketch is scanned into Adobe Illustrator. Rainbow color effect ❶ is created with Linear Gradient. Scanned eye ❷ is colorized in Photoshop to simulate a sunglass effect. Grid of green & black in the other lens ❸ is altered with Twirl filter. Circles are added to the bottom of the letter "A" ❹, Pathfinder filter unites them. Letter is imported into Adobe Dimensions™ which adds perspective. Brush stroke ❺ is created with the Calligraphy tool and then painted with multi-color Gradient. The spreadsheet chart ❻ is converted into an Acrobat PDF file and imported. Light bulb glow ❼ is achieved with Shape Blending tool. Punk filter creates spikes ❽ on globe. Entire ad was created and spell checked using Adobe Illustrator 5.5.

Adobe, the Adobe logo, Adobe Illustrator, Adobe Photoshop, Photoshop, PostScript, Acrobat, Distiller, Adobe Dimensions, and the tagline, "If you can dream it, you can do it" are trademarks of Adobe Systems Incorporated which may be registered in certain jurisdictions. All other marks and trademarks are the property of their respective companies. © 1994 Adobe Systems Incorporated. All rights reserved.

THE STATE *of* the MIND.

Adobe Illustrator 5.5

Adobe is pleased to announce a mind blowing upgrade. The leading illustration and page design program for Macintosh® now becomes a more powerful, all-encompassing creative resource. Adobe Illustrator™ 5.5 for Macintosh runs native on the new Power Macintosh®, and it's loaded with features that add power and automate tasks once difficult or impossible in other drawing programs. New features include trapping and text handling tools like tabs, smart punctuation and a spell checker. And you can import, export and edit any document from any application using the Acrobat Portable Document Format (PDF). You also get a free CD-ROM with 220 Adobe Type 1 fonts, tips and techniques, clip art and more. This upgrade has it all. Now, with Adobe Illustrator™ 5.5, what the mind wants, the mind gets. Call **1-800-521-1976** for information and your nearest Adobe™ Authorized Reseller.



CALL NOW FOR YOUR
UPGRADE
TO THE NEW ADOBE ILLUSTRATOR 5.5 FOR MACINTOSH®, WHICH INCLUDES ADOBE ACROBAT, 220 ADOBE TYPE 1 FONTS, AND THE ADOBE ILLUSTRATOR DELUXE CD-ROM.

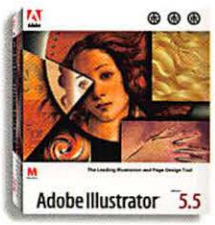
If you can *dream* it, you can *do* it.™

Adobe



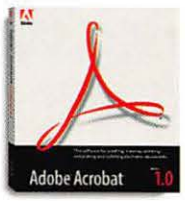
ENOUGH CREATIVE OPTIONS TO PUT YOU IN A STATE *of* RAPTURE

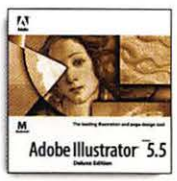
Adobe Illustrator 5.5



CALL **1-800-521-1976** TODAY AND UPGRADE TO ADOBE ILLUSTRATOR 5.5 FOR ONLY $99. (OR $149 IF YOU HAVE A VERSION EARLIER THAN 5.0).

"Upgrade" doesn't even start to say it. New text tools, trapping, and Adobe Acrobat give you unheard of value in a single box. It's a no-brainer that'll take your mind as far as it can go.







Version 5.5 comes bundled with **Acrobat Exchange** and **Acrobat Distiller**™. These breakthrough tools give you the freedom to create PDF files from any application, retaining all of the document's original formatting, graphics and color. Import these, and you'll be able to perform touch-up editing on a page-by-page basis. Adobe Illustrator 5.5 also includes the **Deluxe CD-Rom Edition** which contains QuickTime™ movies of tips and techniques, clip art, documentation, tech notes, and more. This upgrade also contains 220 **Adobe Type 1 fonts** to further expand your graphics options.

Adobe

Power Mac News

Power Mac Software

THE DELUGE BEGINS

Developers have started to jump on the Power Mac bandwagon, delivering an increasing number of native PowerPC programs. Most programs released for Power Macs are straight ports of the 680X0 versions, offering better performance than on Quadras but no additional PowerPC-specific features.

• Ashlar's $2995 Vellum 3D 2.5 drafting program. Upgrades from the 680X0 versions cost about $10. 408/746-1800.

• BAGH Technologies' $4495 Architrion II 5.8 CAD program. Upgrades from version 5.7 $95; from previous versions $695. 514/273-0522.

• Canto Software's Cumulus image-database system and Cirrus's image-manipulation software. Prices vary. 415/431-6871.

• DeltaPoint's $195 DeltaGraph Pro 3. Upgrades from the 680X0 version 3 $29.95, from previous versions $79.95. 408/648-4000.

• FWB's $199 Hard Disk ToolKit 1.5, which supports SCSI Manager 4.3. Upgrades from any version $29. 415/474-8055.

• Trillium Research's $590 Remus 1.2 drive-array–management software, which supports SCSI Manager 4.3. Free upgrades from version 1.1. 715/381-1900.

• Netherlands-based Trio Systems Europe's C-Index Pro database engine. $495 for single users and $795 for the developers' edition. Free upgrades from C-Index+ 4.0. 31 20 638-6507.



HANK OSUNA

• usrEZ Software's $239 ultraSecure 3.0 security software. Free upgrades from version 1.5 or later. 714/756-5140.—GALEN GRUMAN

Power Mac Slowdowns

OLD SOFTWARE IS CAUSE

Early adopters of the Power Macs are reporting slower-than-expected performance in some cases.

Users of Adobe Type Manager have reported noticeable speed degradation, which Macworld Lab tests confirm. Like many system extensions, ATM replaces some native System 7 code with 680X0 code, which slows performance of even native software. (A PowerPC version is under development.)

Apple says that slowdown is often not noticeable unless you have many extensions—10 or 20—installed, or unless you use extensions that run continuously. The $79.95 Conflict Catcher 2.1 from Casady & Greene (408/484-9228) can detect extensions that patch native code with 680X0 code.

Some Power Mac owners will see a performance slowdown when working with some high-end video cards or NuBus-based RAID drive systems. Vendors say that the amount of slowdown could be anywhere from a few percent to 20 percent.

However, most users will not notice the slower performance, since their data-transfer rate is not high enough for the 680X0 emulation to affect performance.

People displaying full-motion video or moving very large files across a high-speed disk array may notice a slowdown. Vendors expect to release new native PowerPC drivers and ROMs within the next few months to correct the slowdown.

The Power Mac 7100 also has a bus-timing problem that causes it to read data from SCSI drives more slowly than it writes—the opposite of how drives normally work. However, very few users will notice performance difference, since the 7100's write speeds are still faster than most peripherals'. —CHARLES SEITER, TIM WARNER, AND GALEN GRUMAN

Power Mac Boosters

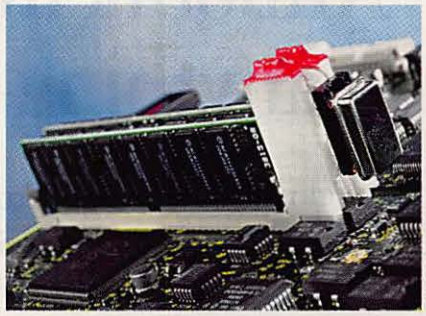
EVEN FASTER SYSTEMS

To bolster the Power Macs' speedy hardware, several companies now offer accelerated peripherals.

• KS Labs offers a clip-on CPU-clock booster for the Power Mac 6100/60 that makes its CPU run at 80MHz, rivaling the speed of an 8100/80. The Alacrity kit costs $165. 614/374-5665.

• Mobius Technologies plans a set of cache cards, to be available in a 256K version for $199 by May, a 512K version for $299 by June, and a 1MB version for $499 by July. 510/654-0556.

• New Video Corporation has shipped its EyeQ digital video-compression board with native Power Mac drivers, allowing 30-frames-per-second full-frame captures. The board costs $1895; the Power Mac software is free to current customers. 310/449-7000.



SCOTT PETERSON

By attaching this $165 device to your 6100's motherboard, you get a faster system.

• RasterOps Corporation has software upgrades to make its 24-bit video-display cards and video-editing cards work in accelerated mode. Upgrades for the Horizon 24, PaintBoard Professional, and MoviePak series are free from RasterOps' BBS (801/785-5783). Upgrades for the PaintBoard Turbo and PaintBoard Turbo XL cost $49 and will be available by July. Owners of RasterOps 20/20 and 20T monitors will also need a $49 cable adapter to use them with the Power Macs. 801/785-5750.—GALEN GRUMAN



Announcing OCR that's so accurate, anything else is simply pointless.

Introducing OmniPage® Professional 5.0 from Caere, the leader in OCR.

We'd like to make our point perfectly clear.

OmniPage Professional sets the standard in OCR. Offering more accuracy, more power, and more flexibility than ever before.

In fact, it offers the most advanced OCR technologies in the industry—technologies that Caere has pioneered.

Only Professional helps you spend more time using scanned information instead of correcting it. Its breakthrough 3D OCR™ feature recognizes grayscale information during document scanning to greatly improve recognition of poor quality documents.

That's not all. Professional recognizes a broader range of documents, reading the most difficult characters and symbols with ease. A feat made possible thanks to its exclusive Language Analyst,™ neural network and fax recognition capabilities.

Professional also allows you to easily edit both text and graphics with its new Text Editor and 24-bit color image editor. And for maximum ease of use and flexibility, there's a new click-and-choose interface, too.

Accelerated for Power Macintosh

So get OmniPage Professional 5.0 for your Mac today. See your local Caere dealer or call for more information on the complete family of OmniPage products at 1-800-535-SCAN. If you own a competitive product, ask about our "Step up to OmniPage" program.

For superior performance, it's your best shot.

omniPAGE PROFESSIONAL



caere™

For Your Information.

Caere and OmniPage are registered trademarks of Caere Corporation. The Caere logo, True Page, and Language Analyst are trademarks of Caere Corporation. Power Macintosh is a trademark of Apple Computer Inc. All other trademarks are of their respective companies. © 1994. All rights reserved.

Circle 69 on reader service card

New Products

THE LATEST MACINTOSH RELEASES

by Cameron Crotty

THIS SECTION COVERS MACINTOSH PRODUCTS FORMALLY ANNOUNCED BUT NOT YET EVALUATED BY *MACWORLD*. UNLESS OTHERWISE STATED, THE MINIMUM REQUIREMENTS FOR OPERATION ARE A MAC PLUS, WITH 1MB OF RAM, RUNNING SYSTEM 6. ALL INFORMATION AND PERFORMANCE CLAIMS ARE SUPPLIED BY THE PRODUCT VENDOR AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY *MACWORLD*. ALL PRICES ARE SUGGESTED RETAIL. PLEASE CALL VENDORS FOR INFORMATION ON AVAILABILITY.

HARDWARE

ELF-20M and ELF-20PB Floptical Disk Drives

Here's a way to take your storage on the road. This SCSI floptical drive is only 35mm high, and it stores up to 20.8MB on 3.5-inch floptical discs. The drive can also read and write standard Mac high-density floppy disks (1.4MB), as well as PC-compatible 1.44MB and 720K floppy disks. The drive's average seek time is 65ms. The ELF-20M is for desktop Macs, while the ELF-20PB works with PowerBooks. ELF-20M $450; ELF-20PB $475. ASDOR (Advance Storage Device Corp.), 602/966-8200, 800/726-4622; fax 602/966-5166.

ELO-128M and ELO-128PB Rewritable Optical Drives

This drive uses 3.5-inch removable optical cartridges and can fit up to 128MB on a single cartridge. The low-profile (35mm-high) drive features an average seek time of 30ms and a SCSI-2 interface. The ELO-128M is for desktop Macs, while the ELO-128PB works with PowerBooks. ELO-128M $975; ELO-128PB $999. ASDOR, 602/966-8200, 800/726-4622; fax 602/966-5166.



ELO-128M

ELQ-105M and ELQ-105PB Removable Cartridge Drives

Based on a SyQuest mechanism, this removable-cartridge hard drive can store up to 105MB on one 3.5-inch cartridge. The low-profile drive (35mm-high) features a SCSI-2 interface and an average seek time of 14.5ms. The ELQ-105M is for desktop Macs, while the ELQ-105PB works with PowerBooks. ELQ-105M $599; ELQ-105PB $625. ASDOR, 602/966-8200, 800/726-4622; fax 602/966-5166.

F/25X

Digital Eclipse's card replaces the original CPU/ROM daughtercard in the PowerBook 140 and 145 and can be installed by any qualified technician. The upgrade increases CPU speed to 25MHz and includes an FPU. Customers must return their old daughtercards to the company. A 33MHz version of the card, the F/33X, is also available for the PowerBook 160 and 165. F/25X $379; F/33X $399. Digital Eclipse Software, 510/547-6101, 800/289-3374; fax 510/547-6104.

Infinity 200 Turbo

A 5.25-inch, 200MB removable SyQuest hard drive that features a SCSI-2 interface and is fully read-write–compatible with 44MB and 88MB cartridges. The average access time on this half-height drive is 27ms, and it ships with a single 200MB cartridge. Internal $667; external $775. PLI (Peripheral Land Inc.), 510/657-2211, 800/288-8754; fax 510/683-9713.

Infinity 270 Turbo

Based on a SyQuest drive mechanism, this SCSI-2 removable-media hard drive fits up to 270MB on a single 3.5-inch cartridge and features an average access time of 23ms. The drive is also backward-compatible with SyQuest 3.5-inch 105MB cartridges and ships with a 270MB cartridge. Internal $599; external $651. PLI, 510/657-2211, 800/288-8754; fax 510/683-9713.

Infinity Optical 1.3GB SL

This half-height, SCSI-2 optical drive uses 5.25-inch cartridges and fits up to 1.3GB on each one. The drive features an average access time of 70ms and can read from and write to 650MB optical cartridges. The half-height chassis fits in Quadra 900, 800, and 650-series Macs, and the drive ships with a single cartridge. Internal $3413; external $3599. PLI, 510/657-2211, 800/288-8754; fax 510/683-9713.

IntelliTouch Model P284-MAC14

Integrated with a 14-inch Apple Macintosh Color Display (Trinitron, 0.26mm aperture pitch), this touch screen provides a resolution of 900 points per square inch. According to the manufacturer, the acoustic-wave technology used is drift-free, eliminating the recalibration required by some other touch technologies. The touch monitor is available with an ADB port for the touch data, and the product ships with the company's MonitorMouse mouse-emulation software. $1620. Elo TouchSystems, 615/482-4100, 800/356-8682; fax 615/482-6617.

Multigraph 447X

A multiple-resolution (autosyncing) color monitor that displays up to 1600 by 1200 pixels at a 60Hz vertical refresh rate. The Trinitron-based Multigraph features a 0.26mm aperture pitch, and displays the more common 1280-by-1024-pixel resolution at 75Hz. Users can adjust the monitor with on-screen controls such as brightness, contrast, color temperature, focus, pincushion, and convergence. The Multigraph 447X complies with both the MPR II and Energy Star guidelines. $1250. Nokia Display Products, 415/331-0322, 800/296-6542; fax 415/331-6211.



Personal Digitizer

Personal Digitizer

Instead of creating three-dimensional objects with an input device that only works in two dimensions, you might try this three-dimensional digitizer. The Personal Digitizer consists of a stylus attached to a jointed arm; sensors embedded in the joints report the position and orientation of the stylus at resolutions as high as 3600 points per square inch (down to 15/1000 inch). The device connects to the serial port of your Mac, and driver software is included, as well as a basic digitizing package. $1595. Immersion Corp., 415/960-6882; fax 415/960-6977.



Multigraph 447X

PortaView

This portable video-to-TV converter is 6 inches long and lets any Macintosh with a video-out port send an NTSC composite or S-Video signal. The device requires an AC adapter, which is included. $195.79. Portable Peripherals Specialists, 206/633-5876; fax 206/633-5876.

SiliconExpress IV

If your SCSI port feels like an eyedropper, but you need a big, fat data hose, you might consider this 16-bit SCSI-2 (Fast and Wide) accelerator on a 7-inch NuBus card. The SiliconExpress IV supports sustained transfer rates of 20 MBps and SCSI chains of up to 15 separate IDs. The card also supports Logical Unit Numbers and selectable SCSI IDs. This last feature means that two Macs, each equipped with one of these cards, can share a single SCSI peripheral. $1295. Atto Technology, 716/691-1999; fax 716/691-9353.

Spectra Star GTx and GLx

Two PostScript Level 2, thermal-wax color printers with true resolutions of 600 by 300 dpi. The GTx comes with 10MB of RAM (expandable to 32MB) and 52 fonts. Users can also expand the printer with plug-in cartridges; a 120MB hard drive is one example. The GLx comes with 8MB of RAM (expandable to 24MB) and 52 fonts, and cannot be expanded via cartridges. Both printers feature simultaneously active parallel, serial, and AppleTalk ports, and they can automatically switch among all three. GTx $4995; GLx $3795. General Parametrics Corp., 510/524-3950, 800/223-0999; fax 510/524-9954.

continues



Super 17S

Super 17S
This 17-inch multiple-resolution color monitor features a 0.26mm dot pitch and flat-square tube design. The display automatically syncs to many standard graphics resolutions up to a maximum of 1280 by 1024 pixels at 60Hz. The Super 17S is compliant with both MPR II and Energy Star guidelines. $895. NSA, 617/461-8300, 800/441-4832; fax 617/461-8664.

SupraFaxModem 288PB
This internal PowerBook fax modem uses the V.FC standard to provide 28.8-Kbps data communications. The 288PB also supports V.32bis and V.32 protocols, plus V.42bis data compression and MNP Classes 1 through 5. The fax side can transmit and receive at 14.4 Kbps, and is Group III–compliant. The fax modem ships with Microphone LT, CompuServe Information Manager, CCL scripts for Apple Remote Access, and PSI's Faxcilitate fax software. $299. Supra Corp., 503/967-2400, 800/967-8772; fax 503/967-2401.

Troll Touch PB
To install this touch-screen system for the PowerBook, Troll Technology fits your PowerBook with a touch screen that is made of clear, pressure-sensitive layers of polyester. The company also attaches to the lid of the PowerBook an external controller box that plugs into the ADB port (the box has an ADB port, so you can still use input devices). Once it is installed, the touch screen has a resolution of 4096 by 4096 points. The installation price includes the company's Touchstar mouse-emulation software. Models are available for the PowerBook 165, 165c, 170, 180, and 180c. $695. Troll Technology, 805/295-0770; fax 805/295-0771.



Troll Touch PB

TV Gamer Plus
It sounds like an add-on for your Nintendo system, but it's actually a signal converter that translates your Mac's video output into NTSC composite video that a VCR or television can understand. The product is compatible with any Mac that has a standard DB-15 video-out port. $219. SIIG, 510/657-8688; fax 510/657-5962.

SOFTWARE

Advise
Send messages directly from your Mac to any alphanumeric pager with this software and your modem. After you type in your message, the software dials a pager number directly—you don't have to dictate your message to an operator. The software stores a list of up to 50 frequently used numbers. $39.99. Motorola, 407/364-2000; fax 407/364-2341.

Artrageous: Beyond the Border
When you've got a document that you need to fence in, you can choose from 100 color EPS border images in this package. Each border can be ungrouped, and there are 500 individual art elements. You can create borders made up of tiny images of animals, plants, books, and musical instruments, or you can choose from abstract patterns. $79.95. Metro ImageBase, 818/881-1997, 800/525-1552; fax 818/881-4557.

Bar Code Labeler II
We're not talking about secret handshakes in a saloon (think about it)—we're talking about software that helps you create and edit bar codes in Code 3 of 9, Interleaved 2 of 5, Code 128, Code 93, UPC (A and E), EAN (8 and 13), and Codabar symbologies. Bar Code Labeler II features graphics, text, full positional control over your codes, user-definable layouts, and the ability to print sequential and repeating bar codes. $149. Videx, 503/758-0521; fax 503/752-5285.

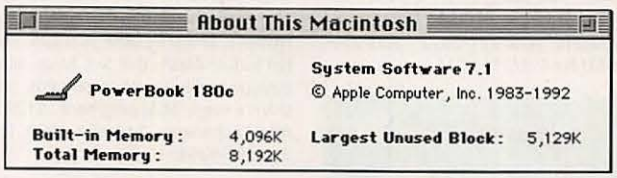
Bookends Pro
Bibliography-management software that could help you spend less time fooling with your footnote format and more time refining your work. Once a work is complete, Bookends Pro searches it, formatting footnotes and creating a bibliography from its database of sources. Users can import reference information from online database services and text files, or type in references directly. The software includes more than 90 predefined reference/footnote formats, including most professional journal specifications; users can also create their own settings. 2MB min. memory; requires Mac SE. $149. Westing Software, 415/435-9343, 800/325-1862; fax 415/435-6286.

Communicate Lite
Beginners will like the topical help, Balloon Help, and tool bar in this telecommunications package. Advanced users will appreciate the fact that Communicate Lite uses the Apple Communications Toolbox, so they can easily add more tools and protocols. The software has an automatic log-in capability and an address book. It also supports multiple simultaneous sessions, treating each session as a separate document. Communicate Lite ships with the company's Zmodem tool for the Apple Communications Toolbox. Requires System 7.

continues

Double your RAM.

Just install RAM Doubler™ software in your Mac and it doubles your RAM. It's that easy. No more hassles, just more RAM.



RAM Doubler is an extension that works by reclaiming memory not being used. MacWEEK says "RAM Doubler couldn't be easier to use." It is the latest from Connectix, the Macintosh memory experts and makers of the award-winning CPU and MODE32.

RAM Doubler is affordable at $99 SRP with a 30-day money back guarantee. Get RAM Doubler wherever great software is sold.



CONNECTIX

800-950-5880 ext. 37

or 415-571-5100, fax 415-571-5195

MACWORLD MW EDITORS' CHOICE

©1994 Connectix Corporation. RAM Doubler requires Mac II (with PMMU) or better (68030 or 68040 processor) with 4 MB RAM & System 6 or 7. RAM Doubler is not compatible with Mac LC, Classic, Plus, SE or PowerBook 100. RAM Doubler, CPU and MODE32 are trademarks of Connectix. All other trademarks are the property of their respective holders.

PowerMac Version Available Soon!

Circle 189 on reader service card

Power Upgrades for all your Macs.

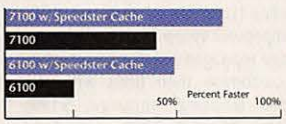
Supports Power Macintosh



$249
Speedster 256K Cache

Instant speed for your Power Mac.

Boost your Power Mac's performance by up to 48% with the Speedster 601 Cache. This 256K level 2 static cache maximizes both emulated and native performance, with **100% Compatibility.** Plus, the Speedster 601 Cache can be easily installed in less than 10 minutes by just plugging it into the cache slot on the Power Macintosh 6100 or 7100.



Speedster 601 Cache increases performance up to 48% (MacBench 1.1 Processor Test).

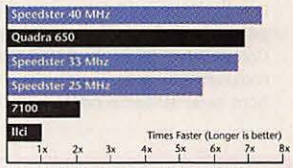
New Lower Prices!	Speedster 040™	DayStar Turbo 040™
Speedster 25i	$399	n/a
Speedster 33i w/cache	$499	$749
Speedster 33f w/FPU & cache	$699	$949
Speedster 40f w/FPU & cache	$899	$1,049



$399
25MHz Speedster

Blazing '040 power for your 030 Mac.

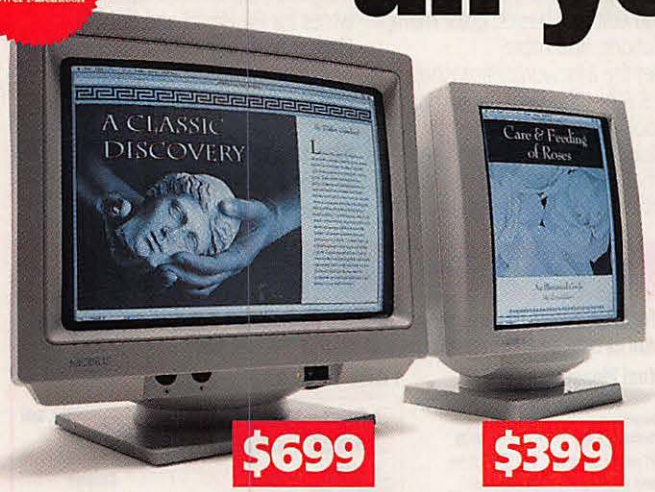
Now is the best time to accelerate your Macintosh with the Speedster 040. Starting at just $399, you can upgrade your Mac IIci, IIsi, IIcx, IIx or LC to '040 power and immediately get blazing, 100% compatible performance. **Speedster 040 runs all your software up to 6X faster!** You'll even outperform Power Macs running 680X0 software by up to three times. Speedster's low-cost design **saves you almost 35% over the competition.** Plus you get a 3-year warranty, 30-day money-back guarantee, and unlimited technical **support rated "Excellent"** by *MacWorld Magazine.*



Adobe Illustrator redraws up to 7.3 times faster with the Speedster 040 Accelerator.

Choice Displays for all your work.

Supports Power Macintosh



$699

$399

Award winning quality and value.

MACWORLD MW EDITORS' CHOICE

Why settle for scrolling around on a tiny 14" monitor when you can **view your entire document** on a award-winning Mobius Display–that's over three times more desktop! Just plug it directly into your Macintosh and view up to 256 gray-levels* on the bright, razor-sharp screen. **Now available for over 50 Macs,** Mobius Displays are rated at over 80,000 hours MTBF—the most reliable in the industry. That's why we back them up with an unprecedented **Two Year Warranty.** And starting at just $399, Mobius Displays are best value you'll find anywhere. So choose the display that *MacWorld* named **"Editor's Choice."**

MOBIUS

*For Macs w/supporting built-in video, video card may be required; call for more information.
How to Order: We accept Visa, MasterCard, AmEx and Discover. Corporate and Education POs. Cache is free with Speedster 33i, 33f, and 40f models only. Competitive pricing as of 4/22/94. All trademarks are property of their respective holders. Mobius, 5835 Doyle Street, Emeryville, CA 94608, (510) 654-0556.*

Call to Order or Get Your Free Performance Handbook

800-800-4334

Circle 109 on reader service card

$49.95. Mark/Space Softworks, 408/982-9781, 800/799-4737; fax 408/982-9780.

Media Management Tools
This set of three utilities can help you keep a handle on those growing piles of network volumes, floppy disks, and other removable media. VirtualDisk runs in the background under System 7 and maintains a running catalog of volumes that you mount on your desktop. EasyLabels creates labels that show a disk's name and contents, and it can print them out in several Avery-label formats. EasyLabels can also print labels based on VirtualDisk catalogs. With DiskDup+, users can make copies from Macintosh or DOS-format floppy disks, as well as from Apple Disk Copy images. Requires System 7. $79. Continuum Software, 206/695-8136, 800/ 603-7446; fax 206/260-2804.

Microphone LT
Before, the only way to get this software package was to buy a modem, but now this stripped-down version of Software Venture's Microphone communications software is available as a standalone product. Microphone LT emulates a range of VT terminal protocols, plus Wyse 50 and PC ANSI, and also supports several file-transfer protocols, including Zmodem. The program also incorporates Loran, a graphical front end for several popular information services, including CompuServe, GEnie, and MCI Mail. A comprehensive manual guides beginners from basic hardware principles to dialing up another computer. $49.95. Software Ventures Corp., 510/644-3232; fax 510/848-0885.

MxdLibrarian
Cataloging software for both computer files and nonelectronic media, MxdLibrarian automatically logs files from both local and networked volumes. The software displays thumbnail images for QuickTime movies and PICT files; You can also preview QuickTime movies and sound resource files within the application. MxdLibrarian is also designed to track noncomputer source materials, including audiotapes and videotapes, audio CDs, records, magazines, books, and slides. Entries can be searched by multiple criteria, including name, subject, item type, and text in the comments field. 7.5MB min. memory; requires System 7. $129. MxdMedia Systems, 205/533-2637; fax 205/534-6473.

Oxyd magnum
With many new game elements and 100 new landscapes, you'll have your hands full trying to finish this sequel without losing your marbles. Players roll around playing fields that are littered with one-way turnstiles, sensors, trigger plates, and traps. The object is to uncover like-colored Oxyds in sequence, thus pairing them up and forcing them to remain open. $59.95. Dongleware Publishing, 617/497-1130, 800/228-6993; fax 617/497-1130.



Oxyd magnum



Second Sight 3.0

Second Sight 3.0
Interested in setting up your own little information cul-de-sac? The latest version of this BBS software features true multiline support, full ANSI color and graphics, Zmodem batch downloading (an online batch-file editor is included), and improved sysop tools for file and message management. Sysops can further customize their BBSs with the included scripting language. $199. FreeSoft, 412/846-2700; fax 412/847-4436.

Select
An Adobe Photoshop plug-in that lets you color-correct CMYK files by adjusting four graphs (one for each color) while you watch the effect on your image. You can add up to 100 points on each curve, move curves simultaneously, and save sets of curves for later use. You can also do what the manufacturer calls local or selective color correction. You select a color (or set of colors) from your image using the eyedropper tool. Then you choose a destination color, and Select moves the image color toward the destination color. You control how much the image color changes, as well as how other, similar colors react. Requires Adobe Photoshop 2.0. $245. Human Software, 408/741-5101; fax 408/741-5102.

Smart Automotive Manager III
Managing an automotive garage doesn't have to be a pain in the oil pan. This software tracks inventory, handles estimates and repair orders, keeps track of clients' vehicles and scheduled maintenance, and shows approximate cost and profit on a job while an estimate is being calculated. Mechanics can create job codes for easy entry of popular services, and they can retrieve customer records by name or license-plate number. Additionally, the software can create service reminders, thank-you notes, form letters, postcards, and other marketing tools. $1995. Integra Management Systems, 707/833-1823; fax 707/833-2596.

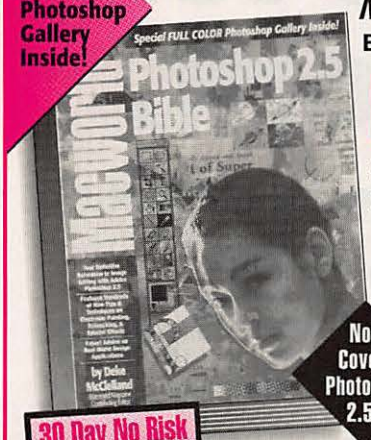
Smartcom II 4.0
The latest version of this telecommunications software includes an integrated

continues

At Last! The Definitive Reference to Image Editing with Adobe Photoshop 2.5

National Bestseller

16-Page Full Color Photoshop Gallery Inside!



Now Covers Photoshop 2.5.1

MACWORLD PHOTOSHOP 2.5 BIBLE GUIDES YOU EXPERTLY THROUGH ELECTRONIC PAINTING, RETOUCHING, SPECIAL EFFECTS, AND MORE!

Now even novices can explore the creative possibilities of this highly sophisticated graphic design program in a book written expressly for Photoshop 2.5. Author Deke McClelland draws on years of hands-on experience to guide you from Photoshop fundamentals through the most advanced techniques, including retouching and complex electronic imaging. Concise, well-organized chapters cover key topics such as getting the most out of Photoshop; working with image file formats; resampling and cropping; paint and edit tool basics; color manipulations, and more.
Get the *Macworld Photoshop 2.5 Bible*, the only Photoshop book officially authorized by *Macworld* magazine, and see what great things you can do with this leading design program!

A contributing editor to *Macworld* magazine, Deke McClelland also writes for *PC World* and *Publish*. He has authored nearly 30 books on desktop publishing and computers.

ISBN: 1-56884-022-5
$29.95 USA/$39.95 Canada
690 pages

30 Day No Risk Guarantee
Try this book for 30 days at absolutely no risk. If it doesn't help you get more out of Photoshop, return it for a full refund.

IDG BOOKS

IDG Books Worldwide, Inc.
155 Bovet Road, Suite 310, San Mateo, CA 94402
(800) 762-2974, (415) 312-0600 Fax (415) 358-1260

Order Risk-Free: 1-800-762-2974

For fastest service, fax your order to (415) 358-1260. Phone 8am to 5pm, PT, or complete and mail the order form. Also available wherever computer books are sold.

Yes! Please send me:

	Qty.	Price	Total
Macworld Photoshop 2.5 Bible		$29.95	
UPS shipping & handling add		4.00/Book	
Inquire about Rush delivery at extra charge		Rush	
CA residents add applicable county tax; IN & MA residents add 5% tax; MI residents add 7% tax; IL residents add 8.25% tax, Canadian residents add 7% GST tax.		Tax	
		Total	

For volume discounts and special orders, please call Tony Real, Special Sales, at 415-312-0644.

I Wish to Pay by:

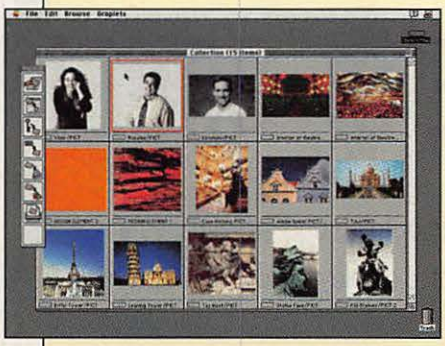
❑ Check
❑ Visa/MC
❑ Amex
No CODs, U.S. funds only; payment must accompany order.

Card No. (include all numbers) Exp. Date
Signature (necessary to be valid)
Name Company
Street City State Zip
Area Code Phone Number

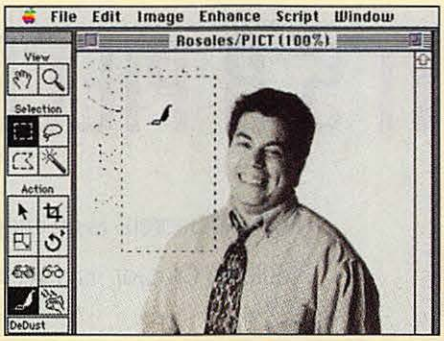
MWB94

A simple demonstration of PhotoFlash software.

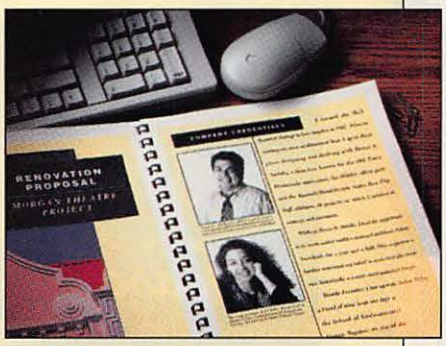
(A complicated demonstration isn't possible.)



1. Find a photo. *The PhotoFlash Browser makes it easy to view and pick a photo — they're all stored here, whether you got them from a CD, scanner or digital camera.*



2. Enhance it. *Crop, rotate and resize a picture with easy-to-use tools. Dust and scratch removal is automated, too. You can instantly preview adjustments you've made.*



3. Place it. *With a point and click, PhotoFlash automatically places the picture in your work. You can also record and automate the tasks you do most often.*



You used to have to spend a lot — and then learn a lot — before you could work with photos on your computer. Now there's PhotoFlash™ software from Apple.

PhotoFlash is easy to use. It helps you organize pictures, enhance them and drop them into your work. It's fast (screamingly fast on a Power Macintosh™). It's memory efficient. And it's just $279.* Call 800-538-9696 to locate your authorized Apple reseller. You'll get the picture right away.

Apple

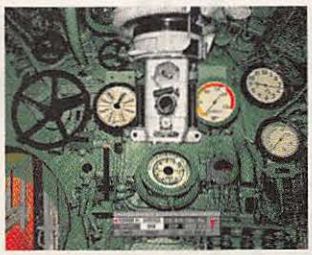
*Manufacturer's suggested retail price as of 1/15/94. © 1994 Apple Computer, Inc. All rights reserved. Apple and the Apple logo are registered trademarks and PhotoFlash and Power Macintosh are trademarks of Apple Computer, Inc.

text editor that supports quoting, word wrap, and removal of line-breaks. Smartcom II 4.0 also automatically detects Hayes-compatible modems that support the I4 AT command, and it configures itself for optimum use with those modems. The software allows users to create buttons to perform scripts and macros, and it supports PowerTalk and Apple events. $149. Hayes Microcomputer Products, 404/441-9200; fax 404/441-1213.

StyleScript
Owners of the Apple Color StyleWriter Pro can now produce Adobe PostScript Level 2 output. With this driver, your Macintosh performs the rasterization that's normally handled by a raster image processor (RIP) in a PostScript printer. StyleScript provides color calibration and a LaserWriter-like interface. The software also supports Apple's PrintMonitor, and ships with 13 PostScript Type 1 fonts. 8MB min. memory; requires Macintosh Classic, System 7. $149. GDT Softworks, 604/291-9121, 800/663-6222; fax 604/291-9689.

TurboCAD for Macintosh
Creating high-precision blueprints is the mission of this computer-assisted-design package. The software features context-sensitive prompts that inform the user about what sort of input the package expects next, easing the learning curve. All features are accessible from floating palettes, and a special Snap palette offers tools for snapping to endpoints, midpoints, and tangents of objects. $149. IMSI, 415/454-7101, 800/833-8082; fax 415/454-8901.

U-Boat
All ahead, flank speed. This re-creation of a World War II submarine in the North Atlantic will have you fighting the Allies from the outbreak of the war until mid-1940. A real-time simulation, the game features digitized sounds and voices, and screens that are as realistic as possible—down to the condensation in the control room. Just watch out for depth charges. 4MB min. memory; requires SE/30 and 16 colors or gray scale. $59.95. Deadly/Games, 516/482-4000; fax 516/482-4057.



U-Boat

Wildlife-Accents
A clip-art volume with an environmental feel, this collection of 50 color images (black-and-white versions are also included) features both animals and plants. The package also includes Wildbits, a 144-character pictographic font. In Wildbits, each image of an animal from the Wildlife-Accents volume illustrates its corresponding letter of the alphabet (for example, *D* for dolphin). Wildlife-Accents is available in EPS, PICT, and TIFF formats; Wildbits is available either as an Adobe PostScript Type 1 or TrueType font. $69. Arro International, 201/746-9620, 800/243-1515, ext. 485; fax 201/509-0728.

CD-ROMS

Assorted Images Volume 1
Give your documents a nineteenth-century feel with this collection of wood-engraving images. The disc contains more than 1000 images in 30 categories, including animals, plants, people, and tools. All files are in EPS format. $79.95. Harter Image Archives, 210/490-0321; fax 210/490-0738.

Critical Path
A 24-year-old chopper pilot named Kat is being pursued through a factory by a gang of thugs and an insane generalissimo with a penchant for high explosives. You must talk Kat through 15 rooms and halls filled with tricks and traps before she can hop into a waiting helicopter to freedom. You'd better not take too long with your decisions, either, or Kat is liable to get impatient and strike out on her own. This action-and-adventure game features live video with human actors in animated landscapes. $79.95. Media Vision, 510/770-8600, 800/348-7116; fax 510/252-4499.

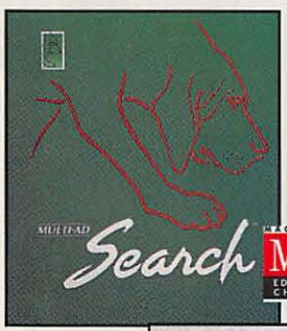


Photomoods

Photomoods
If your work isn't in the mood, then you might want to take the A-train to the store and pick up a copy of this disc. Photomoods contains 100 high-resolution (2048-by-3072-pixel), 32-bit photographic images suitable for use as backgrounds, fills, or art elements. The disc also includes 8-bit and 32-bit screen-resolution versions of each image in PICT format, a file-viewing utility, five PostScript Type 1 fonts, and a catalog of the images in Aldus Fetch format. $189. Shardonnay AV, 213/913-1238; fax 213/913-7917.

Picture Factory
A library of over 2500 royalty-free, 24-bit, 640-by-480-pixel–resolution stock photographs. Categories include scenic views, space, leisure, business, people, backgrounds, animals, and food. The disc ships with browsing software that allows keyword searches on multiple criteria. 4MB min. memory; requires 8-bit color. $49.95. Photodex, 510/449-9079; fax 510/449-3519.

continues



(Icing)



(Cake)

IT'S A PIECE OF CAKE!

Multi-Ad Search® is an image catalog and retrieval system.
Multi-Ad Creator® is a versatile display-ad layout program.

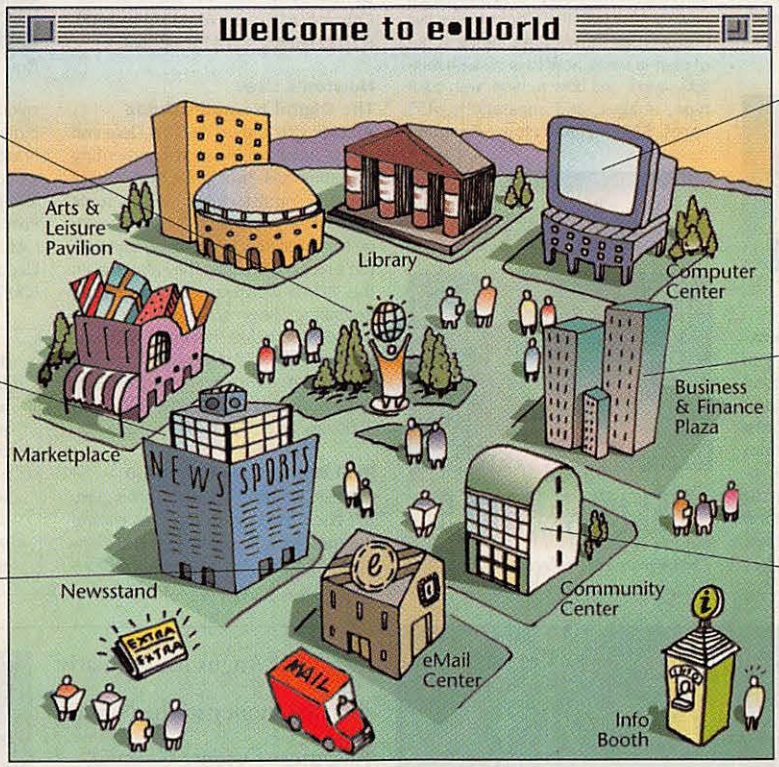
When used together,
Search supports the Creator "Place" Event,
allowing you to select images and
instantly place them in the Creator Files Palette.

Search and Creator— success has never been so sweet.

Multi-Ad Services, Inc. 1720 West Detweiller Drive Peoria, IL 61615-1695 (309) 692-1530

Circle 187 on reader service card

Introducing the on-line service for people who have never tried one. And for people who have.



Elegant graphic interface makes it easy to navigate and find information.

Keep up-to-date with the latest from major news sources.

Easily communicate with users of other electronic services, including the Internet.

Your direct connection for the most in-depth Apple and third-party information and support anywhere.

Be more successful with relevant business, financial, and management insights.

Be part of a global community of eWorld users.

Enter e•World™ now with this free starter kit.

If you've ever tried another on-line service, you'll notice the difference in eWorld immediately. The brilliant graphics are the kind you'd only expect from Apple. And the familiar interface makes it easy to go wherever you choose and find whatever you need.

eWorld puts you in touch with a global community of Macintosh users and with people on other electronic mail services, including the Internet. It's also the best place to get the most in-depth Apple product and support information. And whether you want to access key business information or conduct on-line meetings from anywhere, eWorld is the right place to be.

There are hundreds of other reasons why you'll want to try eWorld. But rather than tell you about them, we'd like to show you. Just send for your free eWorld starter kit, including software and special registration information so you can sign on immediately.* And get ready to enter a world like no other.



FREE $19.95 value

e•World™

The right place. The right time.

I'd like to know more about the exciting, new on-line service from Apple. Please send me the eWorld starter software package — a $19.95 value — free.

Name

Company Name

Home Address Apt./Suite #

City

State ZIP

Phone ( )

Check one: ☐ 1.4MB Disk ☐ 800K Disk 23MW794

Just return this coupon to:
eWorld Starter Kit
Apple Computer, Inc.
P.O. Box 4493
Bridgeton, MO 63044-9718

Apple

*© 1994 Apple Computer, Inc. All rights reserved. Apple, the Apple logo, and Macintosh are registered trademarks of Apple Computer, Inc. eWorld and the eWorld logo are trademarks of Apple Computer, Inc. The eWorld logo is copyrighted in the name of Apple Computer, Inc. Offer is subject to change without notice. Offer valid only in the USA (50 states and the District of Columbia). Offer expires 10/31/94. Coupon must be postmarked no later than 10/31/94. Apple is not responsible for lost, late, or misdirected mail. Please allow 4–6 weeks for delivery. Offer does not include on-line charges. Offer good while supplies last. *NOTE: To enter eWorld, you'll need the free eWorld software, an Apple Macintosh computer with system software version 7.0 or later and at least 4 megabytes of RAM, a phone line, and a Hayes-compatible modem.*

ACCESSORIES

Flightstick Pro and Jetstick
Check six, sky pilot. The Flightstick Pro is a four-button ADB joystick that helps you get a handle on those electronic bogies and bandits. The buttons are all programmable (software included), and there is a programmable four-way switch. Users can load different button settings for different applications. The Jetstick is a two-button, jet-style joystick that also connects to the ADB port. Flightstick Pro $129.95; Jetstick $74.95. CH Products, 619/598-2518, 800/624-5804; fax 619/ 598-2524.

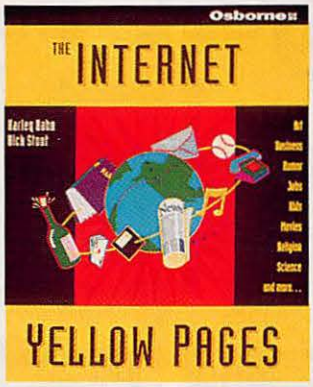


PC-7 Multimedia Video Camera

PC-7 Multimedia Video Camera
Maxwell Smart could probably fit one of these color video cameras into his jacket pocket. The PC-7 outputs NTSC composite video at 350 lines of horizontal resolution, as well as line-level, monophonic audio from a built-in microphone. The camera has automatic white-balance and exposure functions, and is fitted with an f1.8, 4.44mm lens (78-degree field of view). An (included) external power supply is required. $349.95. Advanced Microvideo, 512/335-2200; fax 512/335-1925.

BOOKS

Adobe Illustrator 5.0: The Official Handbook for Designers
Authors Tony Bove and Cheryl Rhodes guide readers through professional designers' artwork, using the artists' words to explain how the special effects and designs were created. Readers learn how to work with Illustrator's interactive dialog boxes, how to get the most out of plug-in filters, how to draw with multiple layers, and how to work with color type, images, and separations. 455 pages. $27. Random House Electronic Publishing, 212/572-2600, 800/733-3000; fax 212/572-4997.

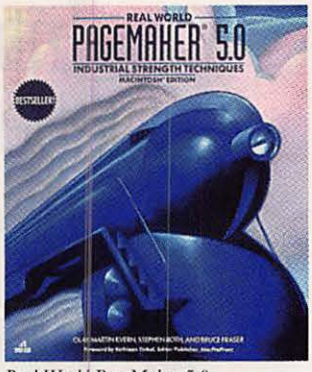


The Internet Yellow Pages

The Internet Yellow Pages
Applying the format of the telephone yellow pages to the Internet, authors Harley Hahn and Rick Stout provide over 2400 listings in 155 categories of Internet services, features, and resources. *The Internet Yellow Pages* includes definitions of the topics listed, as well as hints on accessing the posted information. The book also has an annotated list of Usenet newsgroups. 447 pages. $27.95. Osborne/ McGraw-Hill, 415/549-6600, 800/227-0900; fax 415/549-6603.

Newton's Law: The Digital Nomad's Guide
According to authors Andrew Gore and Mitch Ratcliffe, Newton handwriting recognition is "not the Chevy Chase Show of input technologies, as some would have you believe." They then go on to explain how to improve your Newton's recognition rate. They also explain the PDA's hardware and software, describing how to create reports, memos, and letters; how to send faxes; and how to send and receive E-mail. 458 pages. $24. Random House Electronic Publishing, 212/572-2600, 800/733-3000; fax 212/572-4997.

Real World PageMaker 5.0
Subtitled *Industrial Strength Techniques*, this book covers such topics as getting the most out of PageMaker 5.0's enhanced Control Palette, creating custom color libraries, using Additions, and trapping spot colors. The authors (Bruce Fraser, Olav Martin Kvern, and *Macworld* contributing editor Stephen Roth) also give tips on workgroup publishing, PostScript, and database publishing with OLE. 512 pages. $28. Random House Electronic Publishing, 212/572-2600, 800/733-3000; fax 212/572-4997. m



Real World PageMaker 5.0

To have your product considered for inclusion in *New Products*, send an announcement with product name, description, minimum memory, peripherals required, pricing, company name, and phone number to New Products Editor, *Macworld*, 501 Second St., San Francisco, CA 94107. *Macworld* reserves the right to edit all product announcements.

Some people donate money to keep the air clean. Jeff Angus wrote 2000 lines of code.

Jeff Angus has regularly donated money to the Natural Resources Defense Council. Now he also supports them in a different and maybe even more valuable way. By donating his skills to modify a dBASE program that generates customized reports about toxic substances.

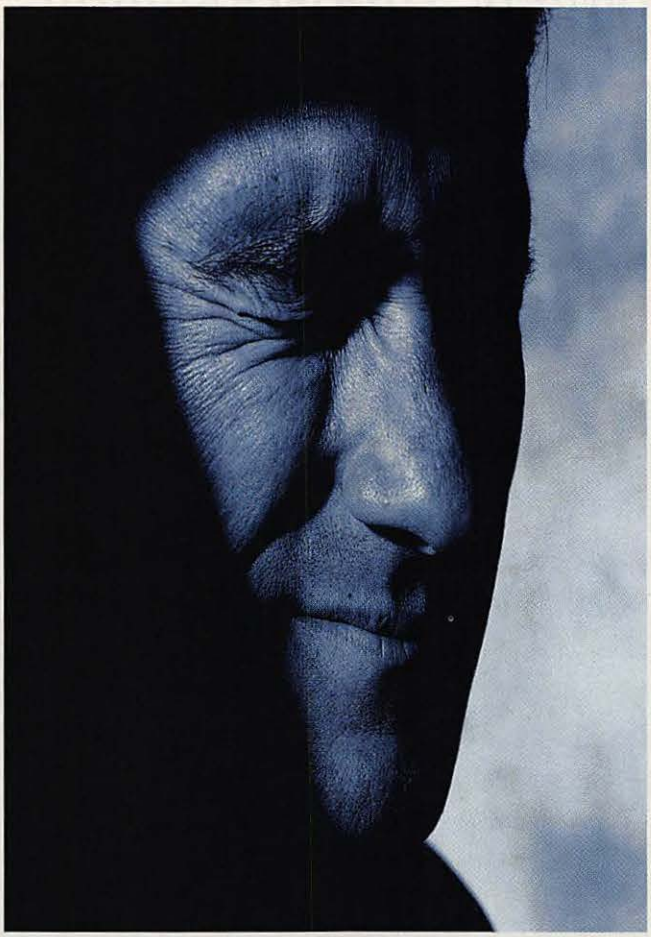


© 1991 CompuMentor

If you'd like to put your own special skills to good use, call 1-800-659-3579. And we'll match you with a local non-profit organization whose needs are compatible with your area of expertise. Call us now, and we'll show you a great way to make a real difference in the world. By doing what you do best.

CompuMentor®
People helping computers help people.
89 Stillman Street, San Francisco, CA 94107

IT'S GONE. AND YOU DIDN'T BACK IT UP.



FACE IT. YOU NEED to back up your files. Use Retrospect, the number one Macintosh backup software — backing up over one million Macs, at last count.

Dragging important files to floppy disks is not backing up. If you crash you'll be retyping and trying to recover files for days. And then still searching for what's missing months later. And what if there's a fire, theft, flood, or equipment breakdown?

dantz

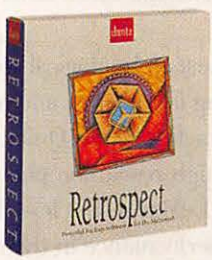
With Retrospect from Dantz you'll be backing up to the storage device of your choice in seconds — including SyQuest, Optical, Bernoulli, floppies, and file servers. And just about any Macintosh tape drive you choose. Retrospect packs more power than all the others put together.

MACUSER EDITORS' CHOICE 1993 AWARD WINNER

AUTOMATIC OPERATION. Simply point and click to create a script, then schedule it to run days, nights, or weekends.

WORLD CLASS RESTORING. Every preference file, document, application, control panel, extension and font is returned to its exact location. You won't miss a beat.

SECURITY. Retrospect has security covered, with full password protection at every entry point. Even encrypt data passed over the network to prevent snooping.



SPEED. Retrospect's customized drivers and interleaved data flow operate SCSI storage devices 20%-100% faster than any other backup software — guaranteed.

Accelerated for Power Macintosh

COMPRESSION. Retrospect's built-in Lessr™ compression cuts backups down to size without compromising performance.

NETWORK OPERATION. Back up a network of Macintoshes as easily as you back up one. Just install a Remote INIT (available in Remote 10- or 50-Packs) on each of your networked Macintoshes and include them in your backup scripts.



TOP INDUSTRY AWARDS. Don't just take our word for it. Listen to what experts say about Retrospect: "Retrospect has no equal." *MacWeek*, Diamond Award. "For backing up and archiving, there's nothing better." *Macworld*. And Retrospect Remote is a *MacUser* 1993 Editor's Choice Award winner.

The price for peace of mind? Well under $200 — backed by a 30 day money back guarantee. Don't be caught off guard when disaster strikes, call your local dealer today.

Dantz Development Corp., 4 Orinda Way, Building C, Orinda CA 94563 (510)253-3000.

© 1994 Dantz Development Corp. Retrospect and Lessr are trademarks of Dantz Development Corp. Macintosh is a registered trademark, and Power Macintosh is a trademark, of Apple Computer, Inc. used under license.

Circle 26 on reader service card

"The Speed You See And The Color You Get With LeMansGT Is Absolutely Mind-Boggling."



Mark Kvamme is President & CEO of CKS Partners, Inc., a full-service advertising and marketing communications company with offices in Silicon Valley, San Francisco, Portland and London. CKS' stellar achievements include the redesign of United Airlines' corporate identity system and the merchandising system for the Apple Newton launch. Given their total commitment to Macintosh® technology, it's not surprising that CKS was one of the first to get Radius' new LeMansGT graphics accelerator card.

"It's like you're moving a thousand times faster than before, finally getting the color fidelity you've always wished for."

LeMansGT is Radius' newest technological wonder for creative professionals. This all-new card delivers true 30-bit color, blazing fast redraw and on-the-fly resolution switching. It features custom Radius ASICs optimized for ultra-fast 32-bit QuickDraw acceleration in 2-page view. It increases productivity when working on high resolution photo realistic images. A perfect complement to the Radius IntelliColor Display/20, LeMansGT is less than 7" long; compatible with any NuBus Mac. And it's engineered for all-out performance in the new Power Macintosh. All for just $2,499.

© 1994 Radius Inc. Radius and PrecisionColor are registered trademarks of Radius Inc. "How The Best Get Better," LeMansGT, PrecisionColor Pro, IntelliColor and Worry-Free are trademarks or service marks of

LEMANSGT radius®

HOW
THE
BEST
GET
BETTER.



"Technology like this is how we keep pace with our clients and ahead of our competitors."

LeMansGT is the industry's first 30-bit color card, and the latest in Radius' line of Macintosh graphics accelerators, which includes PrecisionColor® Pro 24X at $1,799 and PrecisionColor 24X at $1,199.



Radius' boards are unequaled in reliability, backed by a Lifetime Worry-Free Warranty with overnight replacement guaranteed in North America and the United Kingdom. So there's no need to worry about downtime, ever again. No one else in the business offers such comprehensive support to its customers.

"It's obvious Radius is a company that truly understands how graphics professionals work, the tools and support they need to be more productive, creatively."

Call 1-800-227-2795 Ext. 14C for more information about our LeMansGT graphics accelerator and the name of your nearest Radius reseller. Or to receive faxed information, call 1-800-966-7360.

Radius Inc. All other names are trademarks of their respective holders. 5/31/94

Circle 14 on reader service card

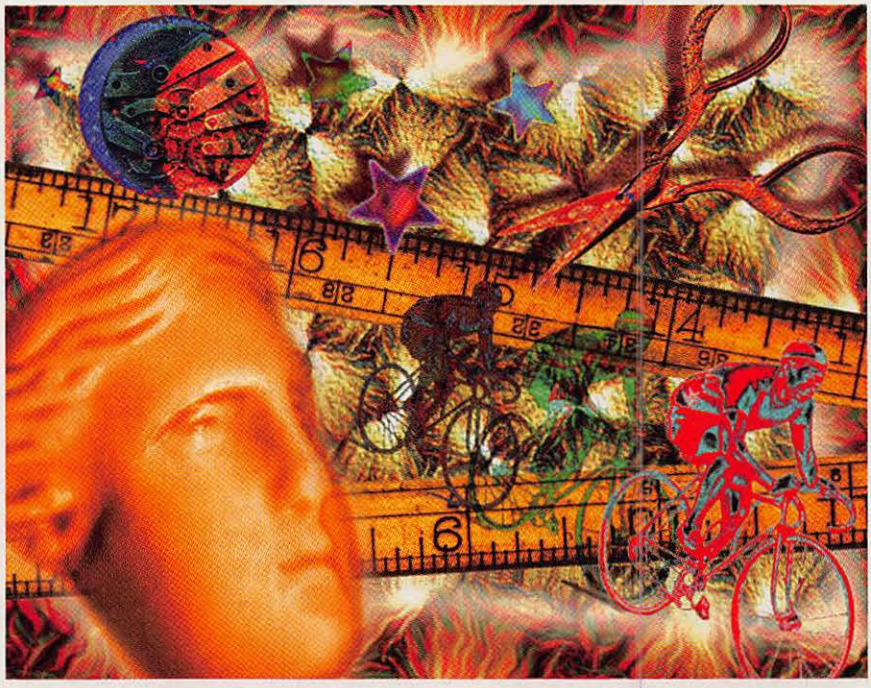
Reviews

Collage 1.0.1

Image-Compositing Software

PROS: Precision editing controls; proxies allow you to reverse operations without image deterioration; resolution-independent rendering. **CONS:** No CMYK support; no means for creating masks inside Collage; slow screen redraw with no interrupt option. **COMPANY:** Specular International (413/253-3100). **LIST PRICE:** $349.

MW ★★★



DIANE FENSTER

SPECULAR INTERNATIONAL'S COLlage allows you to combine and composite multiple RGB images stored in PICT, TIFF, and Photoshop 2.5 formats. Unlike the Mac's most popular image editor, Adobe Photoshop, Collage does not let you edit the pixels inside an image (except via filters). Instead, it treats each image as an independent object; you can position, transform, and layer images, as you can with object-oriented applications such as Adobe Illustrator and Aldus FreeHand. You can also mix images by applying overlay modes, and mask an image using its alpha channel.

Images as Objects

Collage's interface is similar to that of desktop publishing programs such as Aldus PageMaker and QuarkXPress. Much like a desktop publishing program, Collage lets you import raw materials created and edited in other programs and combine them to form a final document. For precision work, Collage offers rulers and snap-to guides, as well as functions that nudge, group, align, lock, and hide images. The program even provides a page boundary and a pasteboard, enabling you to establish bleeds and temporarily set aside extraneous images.

The crowning touch is a floating palette that displays the size of an image, the transformations applied to it, and the numerical results of various other operations. If you don't like an effect, you can remove it by simply entering a different value in the palette (see "The Privileges of Proxies").

Operations can be easily reversed because they are never applied to the original image. When you import an image, Collage creates a 72-dots-per-inch proxy file that represents the image throughout the editing cycle. Like a stuntman in a movie, the proxy takes a beating so the original image doesn't have to. In fact, Collage doesn't bother to revisit the original image until you render the finished composition.

The names of all imported images appear in a scrolling list. Strangely, before you can view an image inside the page area, you have to drag it from the list and drop it onto the page. But this extra step can be forgiven thanks to an otherwise straightforward interface. The first image in the list is the frontmost image in the file; the last is the rearmost. You can change the layers' order by dragging image names in the list or by selecting an image and choosing traditional layering commands (Bring to Front, Send to Back, for example). Much to Collage's credit, you can use it without once referring to the manual.

You can print composite images from Collage, but you can't print color separations. You have to render your image to disk and print color separations from another application, such as Photoshop. As in a three-dimensional drawing program, Collage lets you render your composition at any size and resolution you desire. For example, if you intend to send

a proof to a client by E-mail, you can render the image at a low resolution, just large enough to see important details. After implementing your client's changes, you can rerender the file at a high resolution, then open the rendering in Photoshop, make any last-minute color corrections, and output the composition to CMYK separations.

Masks and Effects

All three of the file formats that Collage supports—PICT, TIFF, and Photoshop 2.5—store at least four color channels. Since Collage can't open CMYK images, each of your RGB files can include an additional alpha channel, which Collage interprets as a mask. In fact, masks are the only method for defining selection outlines in Collage, so there's no reason *not* to include alpha-channel data with each image.

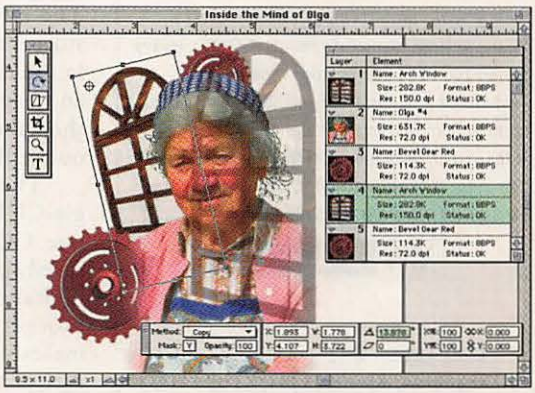
The problem with the alpha-channel approach becomes increasingly evident as you use the program. While Collage supplies a feathering option for blurring the masked area, the program offers no means for defining alpha channels. As a result, you have to create and edit your mask in the file's original application. Collage doesn't even offer traditional selection tools such as a lasso tool or magic wand, so there's no means to select different areas and, say, apply one filter to the first half of an image and another filter to the second half. In fact, the only way that you can combine effects is to import two versions of the image to Collage with separate masks and overlay them. Obviously, it's a whole lot easier to filter your images before importing them into Collage.

While filters are a bust, compositing is Collage's strength. As in Photoshop, you can change the opacity of a floating image to make it translucent. You can also apply a wide range of overlay modes, including modes that are not currently available in Photoshop except via full-blown channel operations (see "Composite Controls"). For fans of drop shadows, Collage automatically creates shadows of a specified color, offset, and fuzziness. And as with all of Collage's functions, if you don't like the way a drop shadow or overlay mode looks three years from now, you can change the effect as easily as selecting a different option.

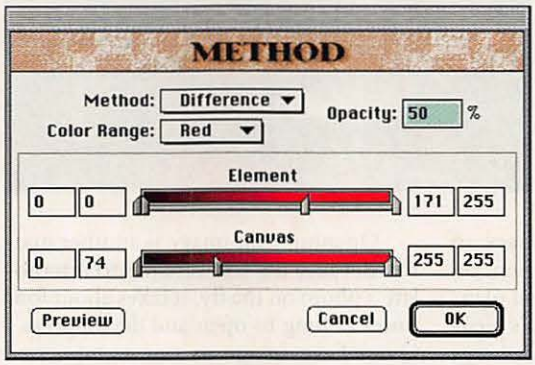
The Slow Pace of Progress

But while Collage is functional and indisputably easy to use, it's unlikely to take the digital-imaging world by storm. Like many first-version products, its oversights are nearly as numerous as its benefits. For starters, it's slow. Even taking into account version 1.0.1's enhanced collection of display qualities, Collage frequently takes longer to apply transformations to its low-resolution proxy files than Photoshop takes to apply similar changes to the real images. This problem would be partially alleviated if Collage provided any means to interrupt the screen redraw, but you can neither cancel the redraw nor choose a command nor select a tool until the redraw has finished. So you sit around and wait a lot.

But speed isn't the only problem. When you move an image, Collage shows only a rectangular bounding box, making it impossible to correctly line up proxies the first time and necessitating a lot of time-consuming nudging with the arrow keys. When you replace an image by reapplying the Import command, Collage forgets all settings previously applied to that image, including any transformations, filters, or overlay modes that you may have applied. As you can imagine, this makes it even more laborious to touch up images in Photoshop on the fly or make adjustments to alpha channels. You will definitely want to make sure you're finished working on an image before you import it into Collage. Among the other deficiencies, you can't undo the importing of an image; the Open dialog box lacks previews; you can't change the page size after creating a new document; and there's no grabber hand, so you must do all scrolling with the scroll bars. A little planning would have gone a long way toward eliminating those distractions.



The Privileges of Proxies When I rotate a proxy, Collage tracks the rotation in the information palette. (Here the rotation value—13.878°—appears highlighted in green.) To undo the rotation, all I have to do is enter a value of 0°. And unlike in Photoshop, rotations and reversions have no deteriorating effect on the quality of the original image, no matter how many times you apply the transformation.



Composite Controls Users of Photoshop will recognize the options in Collage's Method dialog box, which is nearly identical to Photoshop's Composite Controls dialog. The primary difference is that Collage offers three overlay modes from the pop-up menu—Add, Subtract, and Difference—that Photoshop makes available only as channel operations.

But Who Needs It?

Specular International designed Collage as a companion product for Photoshop, and thus far, Adobe seems to have embraced it with open arms. In fact, I've talked to several members of Adobe's technical-support staff who are nearly as familiar with the program as they are with their own. And if anyone should mention the *L* word (HSC's forthcoming Live Picture), Adobe points to Collage as its short-term answer. But the question remains: What with Fractal Design's Painter X2 having months ago introduced much of Collage's functionality, and the threat of Live Picture looming on the horizon, might not Adobe integrate some of these same functions into a future version of Photoshop, thereby rendering Collage obsolete?

Though only Adobe knows the answer, this seems a likely scenario. So why should you purchase Collage? Despite its problems, it's a sure thing and it's available now. For those of you who frequently composite images from a variety of scanned sources and who are frustrated by Photoshop's lack of flexibility, Collage is a flawed but serviceable tool that will enhance your range of options and enable you to render the final image at a variety of resolutions. If compositing is still just a hobby for you, however, I suggest that you wait to see what kind of improvements the future holds in store for both Collage and Photoshop.

—DEKE McCLELLAND

Apple QuickTake 100 for Macintosh

Digital Camera

PROS: Least expensive color digital camera; lightweight; relatively fast picture processing; Flash EPROM protects images from power failure; delivers immediate results. **CONS:** Heavy compression and interpolation requirements yield lots of artifacts; fixed-focus lens with no zoom option; maximum of eight pictures at full-screen resolution. **COMPANY:** Apple Computer (408/996-1010). **COMPANY'S SUGGESTED PRICE:** $749.

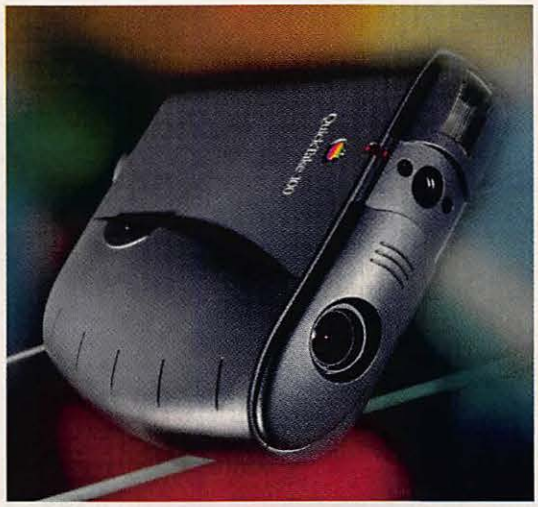
MW ★★★

COMPARED WITH OTHER DIGITAL cameras, Apple's QuickTake 100 for Macintosh is a value leader. The only digital camera to offer color at a price of less than $1000, the QuickTake is lightweight and easy to use, processes pictures quickly enough to take several shots in succession, and stores images in memory so there's less chance of mechanical failure. But when compared with traditional 35mm cameras combined with, say, Photo CD film scanning, the value of the QuickTake 100 slips. Thanks to significant compression and interpolation requirements, the image detail is disappointingly coarse. The camera can take only eight pictures at a time when set to the more passable of the two image resolutions, and it doesn't even have a focus ring or zoom option. After using the camera for two weeks, I thoroughly enjoyed the immediacy of snapping pictures and viewing them on screen minutes later, but I also had plenty of time to mull over the camera's plentiful and obvious deficiencies. All things considered, it's one of the best gadgets of its kind, but it doesn't yet qualify as a practical tool.

Holding Up a Scanner to Real Life

Like desktop scanners, digital cameras use photosensitive chips called charge-coupled devices (CCDs) to convert light into digital signals. More-expensive cameras feature three CCDs—one each for red, green, and blue light. The QuickTake 100, however, relies on a single CCD to capture all colors. Each of the 307,000 pixels on the CCD—that's 640 by 480 pixels, one for every pixel in a digital image—is exclusively sensitive to either red, green, or blue light. This means the QuickTake actually captures only 8 bits (as opposed to 24 bits) of data per pixel. The camera compresses an image and stores it in RAM. When you open an image using the QuickTake software or an image editor such as Adobe Photoshop, the software interpolates the image on the fly from 8-bit to 24-bit color.

The primary advantages of the single-CCD approach are a reduced price—one CCD costs less than three—and speedy picture processing. Whereas many digital cameras take several seconds to process a single image, the QuickTake makes you wait about a second between each picture (assuming you don't need the built-in flash, which takes 7 seconds to recharge). But that's still too long to shoot more than a couple of photos of wildlife or other moving subjects.



TOM GIBSON

Opening your image is another matter. Because the software has to interpolate a photo on the fly, it takes about four times as long to open and decompress a QuickTake image as one compressed with JPEG. The fact that the software has little real color information to work with also presents problems. In continuous-tone areas, the software is able to interpolate with a reasonable degree of accuracy. The inevitable artifacts are nothing beyond what you might associate with medium-quality JPEG compression. But in high-contrast areas, the interpolation is less successful. In a photo of a black letter against a white background, for example, the edges of the letter are fringed with a rainbow of differently colored pixels. This is because the software can't figure out what to do with the medium-luminosity red, green, and blue pixels that are bordered by low-luminosity colors (black) on one side and high-luminosity colors (white) on the other. This deficiency makes the camera particularly ill-suited to product photography.

Point-and-Shoot Architecture

Another reason that product shots should be left to another camera is the QuickTake's fixed-focus lens. A subject must be at least four feet from the camera to appear in focus, so close-ups are out. In fact, optically, the QuickTake 100 has more in common with a $10 disposable camera than with a basic 35mm model. According to Apple, the QuickTake's field of view is equivalent to that of a 35mm camera with a 50mm lens. However, the QuickTake sorely needs a telephoto option; even a single zoom setting would make a world of difference. With a little experience, you become painfully aware that the smaller your subject appears in the viewfinder, the fewer pixels the camera devotes to it. So you spend a lot of time positioning yourself, which can be a real problem when taking action photos.

Photographing at dusk with the Apple QuickTake 100 is another trial. The aperture adjusts automatically from *f*2.8 to *f*16, and the slowest shutter speed is 1/30 second. Once the sun starts setting, this camera needs a flash. Interestingly enough, the QuickTake includes a standard tripod socket; but with these specs, I doubt many folks will take advantage of it. The viewfinder lacks sight lines, making it difficult to ensure that your pictures will be straight. And last and least important, the QuickTake is designed for right-handers. Both the grip and the shutter release are on the right-hand side of the camera, so most left-handers (like me) will find themselves shooting with both hands.

Only Eight Pictures per Session

The QuickTake 100 includes 1MB of memory, which enables you to shoot eight full-screen (640-by-480-pixel) images, 32 quarter-screen (320-by-240-pixel) images, or a combination of the two sizes. For even the least discerning user, the quarter-screen option is prohibitively small. Even if you don't plan on using the entire full-screen photo, you'll appreciate the leeway it offers for cropping and rotating—luxuries not permitted by the quarter-screen option. Furthermore, you can downplay some of the artifacts by





Day and Night These two full-screen images were shot with the QuickTake 100 on opposite ends of a cruise boat. I shot the lower image using the camera's built-in flash. I used Adobe Photoshop to adjust the color levels of the images, but otherwise they appear exactly as the camera captured them.

resampling a full-screen image to a smaller size using Photoshop or its equivalent. Resampling a quarter-screen image doesn't leave you much to work with.

If you think you can shoot eight photos, copy them quickly to a handy PowerBook or Duo, and then shoot some more, think again. It's not that the interface is inadequate; it's a simple task to connect the QuickTake to your Mac's modem port using a standard serial cable. And a control panel allows you to mount the camera as if it were a disk, permitting you to drag-copy its contents. However, the task of lugging around your computer, setting it up on a level surface, connecting the cable, powering up, mounting the camera, copying the images, and then erasing the camera's images so you can shoot again might be best described as clumsy and certainly time-consuming. This procedure takes five minutes, and that's if you resist the temptation to view your pictures—which is, after all, the only way to get immediate feedback. Also worth noting: the QuickTake utility, which lets you view images and perform minor edits such as 90-degree rotations, requires 3MB of application RAM to open an image. So you can more or less rule out using the utility on any machine equipped with less than 5MB of RAM. If you plan on shooting lots of photos off-site, you're better off purchasing three or four cameras.

The good news is that once you press the shutter release, your photo is about as safe as rewritable media gets. The QuickTake uses Flash EPROM (erasable, programmable read-only memory), so it doesn't require a constant power supply to store your images. Even if the batteries run out of juice or you remove them, your images are absolutely safe. Unfortunately, the version of Flash EPROM that Apple provides with the QuickTake 100 doesn't allow you to erase images selectively. If you want to erase one image, you have to erase them all. So you should use this option only after transferring the images to disk, or if you've completely screwed up and want to start over again.

Incidentally, the recessed erase button on my camera broke about the fourth time I used it. When I pressed the button using a paper clip—the preferred tool for this purpose—the button gave way, never to return. I was still able to shoot photos, but I had to hook up the camera to my computer and use the QuickTake utility to erase the images.

Is the QuickTake Ready?

Though the QuickTake 100 provides too few options and too little quality to interest most photographers and image-editing professionals, it may excite the curiosity of some business types. As a real estate agent, my wife was very satisfied with the camera's ability to capture new listings that she could immediately post in the office and fax to other brokers. It's also adequate for shooting corporate badges, newsletter and presentation photos, and other images whose impact depends more on immediacy than quality. And lest we forget, every image taken with a conventional camera costs money—first for film and then for developing. The QuickTake's images are free. If you're in the market for a medium-quality, digital color camera that costs less than $1000, the QuickTake 100 is the best deal around. But if you're not in a hurry, you may want to wait until some of its more obvious problems are ironed out.

—DEKE McCLELLAND

QA-350 LCD

LCD Projection Panel

PROS: Exceptional price-performance ratio.
CONS: Not suitable for multimedia projections.
COMPANY: Sharp Electronics Corporation (800/237-4277). **LIST PRICE:** $2495.

MW ★★★

LCD PROJECTION PANELS ARE based on two technologies: passive matrix and active matrix. Because of their slower refresh rate, passive matrix models can't keep up with rapid animation and video. For projecting multimedia displays, an active matrix panel makes more sense—but a high-quality, color active matrix projection panel can cost $6000 or more. At less than half the cost of a typical active matrix panel, Sharp's QA-350 LCD offers an economical alternative for presenters who don't need multimedia capability. Using what Sharp calls Dual-Scan passive matrix technology, the QA-350 scans two lines of pixels at a time. The result is a bright, sharp image of up to 512 colors, with faster refresh than I've seen in other passive matrix panels.

When I compared it side-by-side with an active matrix panel, the QA-350 fared surprisingly well. From a distance, the images on both panels were crisp, bright, and easy to read. At close range, it was easier to see individual pixels on the active matrix image, but this didn't improve the



PAUL BERG

quality of the overall image. When images moved, the differences between the panels became more apparent. Rapid mouse movements blurred, but were still visible, on the QA-350.

A few years ago a typical passive matrix LCD panel cost about $5000, was awkward to use, and produced murky, sluggish displays. At less than $2500, the QA-350 LCD shows how far the technology has come.—GEORGE BEEKMAN

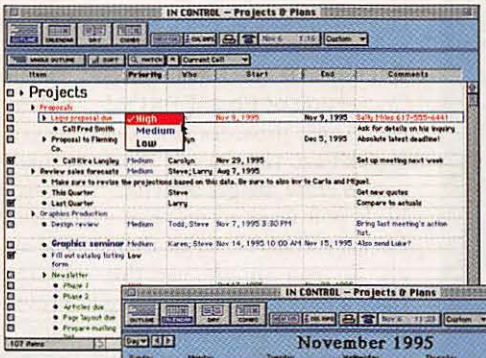
SEVEN NEW WAYS TO GET TOTALLY IN CONTROL™



If you're looking for faster, better ways to get things done, take a look at the all-new IN CONTROL 3.0. It's the complete planner and organizer for the Mac that can get you totally organized. (Honest!) You see, IN CONTROL is the only Personal Information Manager that combines the award-winning, multi-column Action Outliner,™ with full-featured daily, weekly and monthly calendars. The result? You can throw away those little yellow stickies, make short work of long to-do lists and bury that dog-eared calendar.

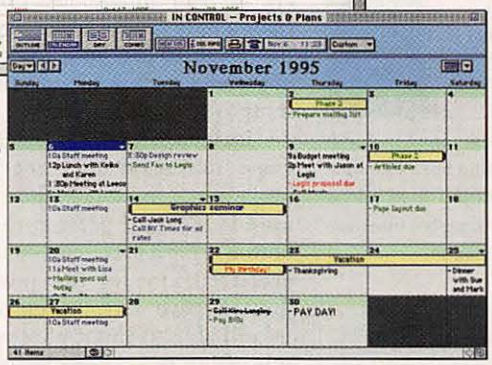
1 Spend your time wisely. IN CONTROL is easy to use, so you can dig right in and start planning immediately. And with its fully integrated outline and multiple-view calendars, you can plan, organize and schedule – all at the same time!

Plus, you can instantly look up information from FileMaker® Pro, Touchbase® Pro, Now Contact™ and Dynodex.™ IN CONTROL even dials the phone!



IN CONTROL'S multi-column Action Outliner™ helps you plan smarter.

2 Plan smarter and better than ever before. IN CONTROL helps you prioritize everything – in as much detail as you need – so it's easy to choose what's most important to work on first.



Flexible calendar features make scheduling a breeze.

3 Be adaptable to change. IN CONTROL's flexible, intuitive interface makes changing your plans, reorganizing your day, shifting responsibilities and rescheduling your appointments a snap!

4 Keep your sense of style. Unlike many "get organized" products, IN CONTROL doesn't force you to change your style. It works the way you work and provides countless tools to help you get organized faster, better and easier than ever before. You can even print pages to fit the most popular paper organizers!

5 Don't lose sight of the big picture – or the details. IN CONTROL's daily, weekly and monthly calendars allow you to view your activities up to a year at a time, ensuring that all your plans fit with your long-term goals.

With IN CONTROL's new daily views, you can also focus on the details. Like your schedule or to-dos for one particular day.

6 Never let anything slip through the cracks again. IN CONTROL automatically reminds you of your most critical tasks, guaranteeing that you won't forget anything. Plus, auto carry-forward and recurring event features speed up scheduling.

7 Get the all-new IN CONTROL 3.0, risk-free. When you order, you don't risk a penny because IN CONTROL is backed by our ironclad 60-day guarantee of total satisfaction.

For more information, or site license or volume discounts, call: **1-800-925-5615** or (617) 776-1110. To upgrade, call: **1-800-784-7388 ext. 300.**

MacWEEK ◆◆◆◆ **MacUser** ★★★★½ **MACWORLD** ★★★★

ATTAIN **Attain Corporation,** 48 Grove St., Somerville, MA 02144
(617) 776-1110 Fax: (617) 776-1626 Internet: Sales@Attain.com

60-DAY UNCONDITIONAL MONEY-BACK GUARANTEE
Through MacConnection and all participating vendors.

MacConnection® **$85**
Ask for item #8465
1-800-800-6827 ext. 300 Suggested retail: ~~$129.95~~

©1994 Attain Corporation. All products are trademarks or registered trademarks of their respective holders.

Circle 6 on reader service card

microLaser Pro 600

Workgroup Printer

PROS: Fast; networkable; high paper capacity. **CONS:** Expensive. **COMPANY:** Texas Instruments (800/848-3927). **LIST PRICE:** $2148.

MW ★★★

IF YOU'RE LOOKING FOR THE SPEEDY Gonzalez of workgroup printers, consider the Texas Instruments microLaser Pro 600 PS65 with PowerStep. The Pro 600 is fast and flexible. It performs well and is a good choice for multiplatform office environments—but there are a few other printers that offer comparable performance for a better price.

I tested the microLaser Pro 600 with PowerStep, 6MB of RAM, and 65 scalable fonts. Retailing for $2148, the microLaser Pro 600 has an 8-pages-per-minute Sharp engine with 600-dots-per-inch resolution. The printer comes standard with 6MB of RAM (expandable to 22MB) and supports both PostScript Level 2 and PCL 5. The Pro 600 is also available in a PS23 version with 23 scalable fonts ($1599 list price, $1948 with PowerStep). The PS23 can be easily upgraded to the PS65.

TI also offers the PowerStep, an easy-to-install option that upgrades the 20MHz RISC processor to a 40MHz RISC processor. The PowerStep also adds four times the cache memory of the standard Pro 600, plus a built-in floating-point processor. This option has a suggested retail price of $349. The PowerStep gives the Pro 600 its speed: without it you survive, but the printer is slower. However, the print quality should not be affected if you skip the PowerStep option.

The Pro 600 is fast—89 percent faster than the Hewlett-Packard LaserJet 4M on Macworld Lab's Microsoft Word multifont-document test. It also fared well in other Macworld Lab tests. It was slower than the Apple LaserWriter Select 360 in the 20-page Microsoft Word single-font document and the PageMaker 4.2 newsletter, but in each case by less than 25 seconds—an insignificant amount of time for a large or complex document.

The print quality on the microLaser Pro 600 is good. Characters are smooth and well formed, especially in larger type sizes. Print quality is not quite as good as that of the LaserWriter Select 360 or the Hewlett-Packard 4M, but differences are almost imperceptible, especially for memos and typical office documents.

The Pro 600 has a fairly small footprint and should fit easily into most office environments. Including two 250-sheet paper trays, the printer weighs 32 pounds and measures 13 by 14.4 by 12.8 inches. The ability to print 500 pages without refilling a paper tray is a real advantage, especially if you use the printer in a workgroup environment. TI also sells a 30-envelope tray that replaces the upper paper tray. The Pro 600 can print all the standard paper sizes, as well as labels and transparencies. The printer driver lets you select which printer tray to print from; you can have letterhead paper in one tray and plain paper in the other. Again, this is great in a workgroup environment where the printer may serve a variety of people with different needs.

The microLaser Pro 600 is compatible with DOS, Windows, and Macintosh environments. Both a high-speed parallel interface and an AppleTalk interface are included as standard features. This printer also provides automatic port-switching, which it achieves through an Intelligent Interfacing feature that allows all ports to remain active when more than one computer is connected to the Pro 600. The printer switches between computers, automatically adjusting for each environment. Novell Ethernet (10BaseT), TCP/IP (10BaseT), SCSI, and RS-232/serial-connection options are also available.

Texas Instruments has climbed on the Energy Star bandwagon (Energy Star is the Environmental Protection Agency's standard for energy conservation); the microLaser Pro 600 is Energy Star–compliant, and *Macworld* considers this a plus. One missing option is the PostScript fax capability that is offered with Apple's LaserWriter Select 360. This option could make an already good printer even more valuable.

The microLaser Pro 600 comes with an 80-page *User's Guide* and a 22-page *Installation Guide*. The installation guide is useful, providing a good description of how to set up the printer and load paper, plus information on consumables. The user's guide is also informative, with a detailed section on troubleshooting tips, a service checklist, and explanations of the LCD messages. It also elaborates on adjusting the contrast and cleaning the corona. However, I couldn't find any discussion in the manual on automatic port-switching.



ROBERT PERRY

Overall, the Pro 600 is fast and provides good print quality. The price is steeper than that of other products in this category, but if you work in a busy office where a really fast printer makes everybody's life easier, the higher price may be worth it.—LAUREN L. BLACK

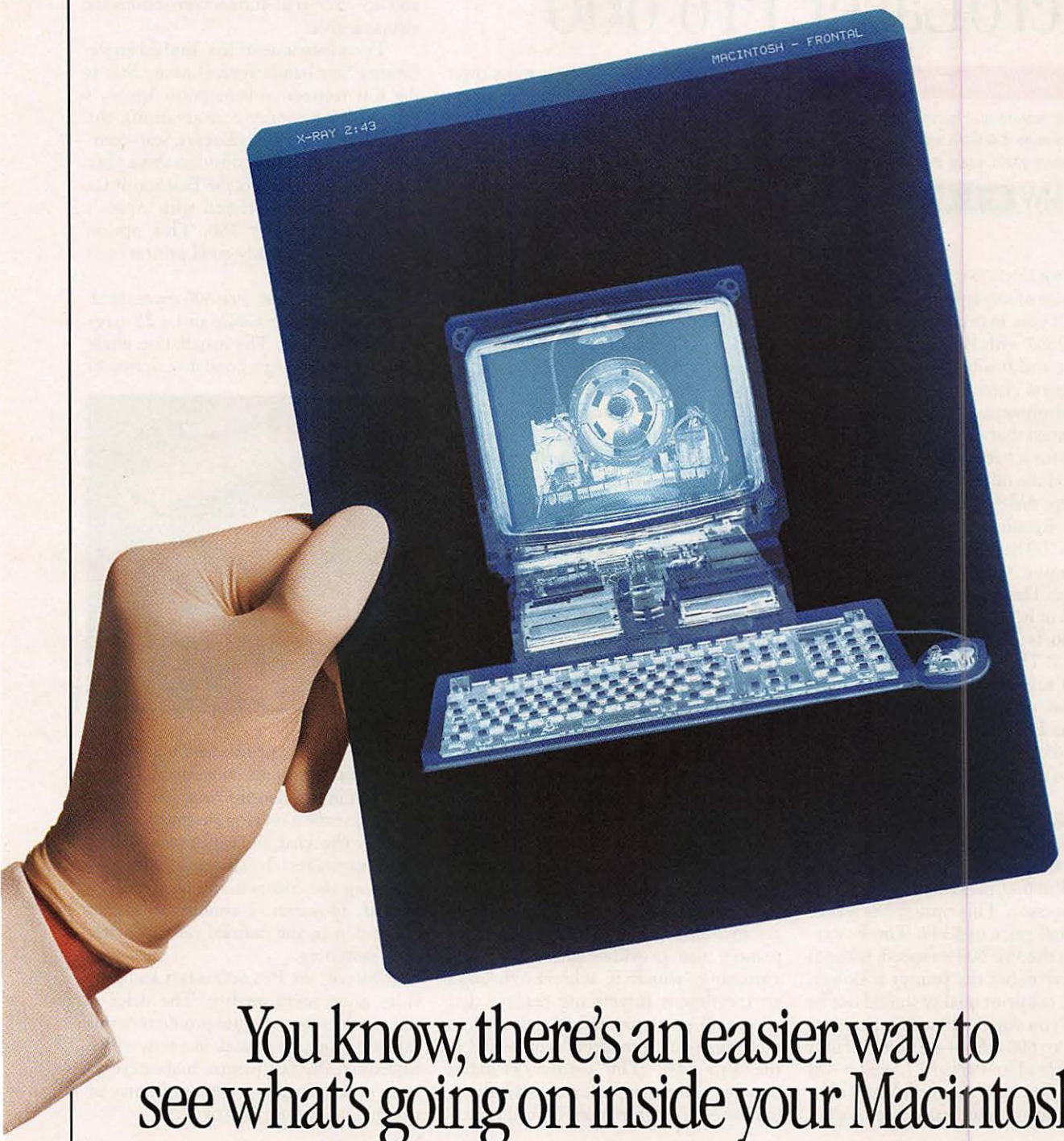
MW LAB

How Fast Is the microLaser Pro 600 PS65 with PowerStep?

Best result for each test. Times are in seconds. Shorter bars are better. Products are listed in decreasing order of overall performance.

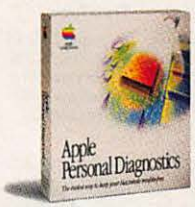
	Multiple Fonts	Single Font	MacDraw Pro	FreeHand 3.1	PageMaker 4.2	TrueType
	Print speed for a typical 7-page Microsoft Word 5.0 document with a variety of fonts, sizes, and styles.	Print speed for a 20-page Word 5.0 document with double-space, 12-point Courier text in plain, bold, and italic.	Print speed for a complex drawing with few special effects, over 2000 simple objects, and several lines of Helvetica text.	Print speed for a complex graphic with special PostScript effects. Illustration had nonlinear blends and Bézier curves.	Print speed for a 4-page newsletter with several fonts, a MacPaint image, and 3 gray-scale TIFF images.	Print speed for a 1-page Word 5.0 document containing 4 TrueType fonts in various sizes.
TI microLaser Pro 600	101	165	76	192	110	50
Apple LaserWriter Select 360	113	141	89	327	93	54
Apple LaserWriter Pro 600	154	164	125	501	124	62
HP LaserJet 4M with RET off	191	163	111	488	136	77

BEHIND OUR TESTS Tests were conducted on a Mac Centris 650 running System 7.1 with 8MB of RAM, a Quantum LPS230 internal hard drive, AppleTalk on, and background printing off.—**Macworld Lab testing supervised by Lauren Black**



You know, there's an easier way to see what's going on inside your Macintosh.

If you really want to keep an eye on the health of your Macintosh,® look no further than Apple® Personal Diagnostics. The most comprehensive testing and repair program ever created for the Macintosh, to help keep it running trouble free. It's incredibly easy to use, performing a multitude of tests with just a click of the mouse. From complete logic board and drive testing to in-depth system software analysis to repairing damaged disk directories, even alerting you to problems before they occur. To find out more, call 800-538-9696, ext. 250, for the Apple reseller near you. And see the power lurking beneath that mild-mannered Macintosh exterior. The power to be your best.®



Introducing Apple Personal Diagnostics for Macintosh.

©1994 Apple Computer, Inc. All rights reserved. Apple, the Apple logo, Macintosh and "The power to be your best" are registered trademarks of Apple Computer, Inc. This ad was created using Macintosh personal computers.

Pablo 2.0.1

Database Reporting Tool

PROS: Flexible and easy to use; great implementation of table "pivot" function; good charting and object graphics. **CONS:** Maintenance of data warehouse is a serious chore. **COMPANY:** Andyne Computing (613/548-4355). **LIST PRICE:** $695; for ten users $5495; HyperCube Utilities $99.

MW ★★★★

IN A WELL-RUN DATA WAREHOUSE, A company's information-services division diligently tracks down all data relevant to managing the company and organizes it in a way that lets everyone in the company get quick answers to questions. There are plenty of ways to manage this service; most of them are based on IBM's original structured query language (SQL), but challengers to this ten-year-old technology have appeared.

One serious challenger is Pablo (PªBLO in Andyne's orthography), a new relational-database reporting tool that uses Apple's Data Access Language (DAL) to communicate with remote databases. Much of Pablo was in fact developed at Apple, where it's been in use as the companywide sales reporting system for more than a year. In Pablo's design of the data warehouse, information resides in plain two-dimensional tables linked to a hierarchy of four other tables that specify a multidimensional structure for the data. Pablo is designed to report data views that "pivot," like the views in Brio's Prism, Lotus Improv, or the upcoming Microsoft Excel version 5. In a pivoting plan, each data element (a sales total, for example) is identified by a string of labels (month, quarter, year, geographic region, specific product, product category) arranged in a special order. This identification scheme makes it possible to call up data with categories in any order. A report can be specified as "sales for the last three years by region" or expanded to "sales for the last three years by state" or shuffled to "sales by state by product category by quarter" with a few clicks.

Cubist Perspective

The basic defined-table set from which Pablo draws its reports is called a data HyperCube, since the table-plus-structure specification describes a multidimensional data object. You pick the database you want to access with the Source Browser, which lets you list local (residing on your Macintosh) and remote HyperCubes. Then you formulate your table from HyperCube data in the View Builder, which lists all the dimensions of the HyperCube you've selected and lets you pick out individual data categories for your report (see "Swing Shift").

The reporting facilities in Pablo, fortunately, go way beyond mere table construction, and also beyond the capabilities of its current competitors.

Pablo does charts from selected data and provides drawing tools to dress up reports (you can also import and place PICT files). The Data Navigator lets you pick different data sets to chart from within a report (see "Sailing"). Spreadsheet-like functions do subtotals, totals, and simple statistics on report data. This last facility is helpful in the overall Pablo scheme, because it means the designers at the corporate level responsible for HyperCube maintenance have many fewer data fields to include.

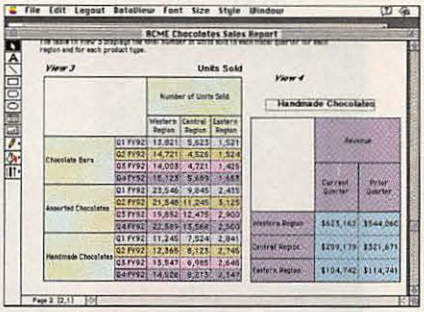
A Job for Pros

Making things easier for the information-systems department is not a small issue in Pablo. Someone has to think through a company's information requirements in advance and, in detail, find the data to fill the primary data table and specify a HyperCube structure that's rich enough to be useful (see "Square into Cubes"). If there's not enough structure in the hierarchy (the details of dimensions, levels, columns, and data members), end users will be downloading huge chunks of table to their Pablo reports for simple inquiries; if the structure is too elaborate, end users will spend hours scrolling in the View Builder to make up basic reports. Someone also has to assign user profiles for all Pablo users in the system, specifying with the Pablo password structure which users have access to what HyperCube data.

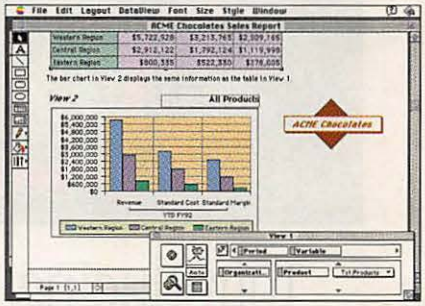
Corporate data managers that I talked with (many of whom were members of the original Apple project teams and are now implementing the technology at other large companies) describe the usual Pablo situation as an end user's dream paid for with plenty of hard work by the information-services department. It's possible to set up some HyperCubes for experiment very quickly, but refining and updating HyperCubes in an environment in which the data currently resides on a corporate-strength database or server (Butler, Ingres, Oracle, Sybase, and most other popular choices) takes months. A successful implementation of Pablo as a data warehouse system usually has the additional repercussion that, since Pablo makes data access so straightforward, it tends to make middle-management staffing look bloated.

Pablo is one of the most effective end-user data-reporting tools yet evolved. It puts a considerable workload on the corporate information department that sets up a Pablo system, but it's clearly appropriate to assign the heavy data-systems planning to a highly trained central corporate service rather than leave it to the end users. Pablo works with most popular mini/mainframe relational databases, sidesteps the hassles of SQL data access, and produces great reports with minimal effort. It's most appropriate for midsize and large companies, and in the right settings will rapidly pay for itself.

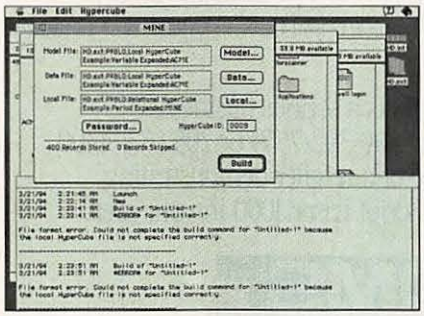
—CHARLES SEITER



Swing Shift By picking categories in the View Builder, you can easily assemble different Pablo views. Here are two selections from the same sample data set, with a basic table at left and a summary table at right.

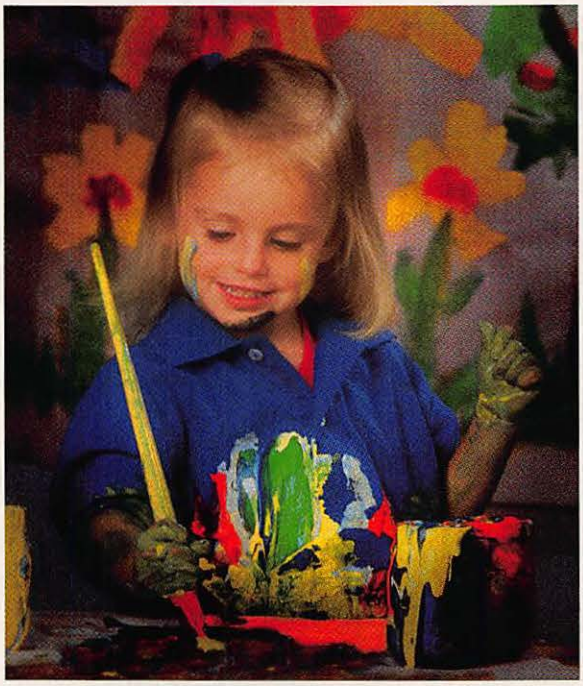


Sailing Pablo's Data Navigator encourages you to tinker with reports in forms—you can swap data sets in and out of charts to look for data relationships.

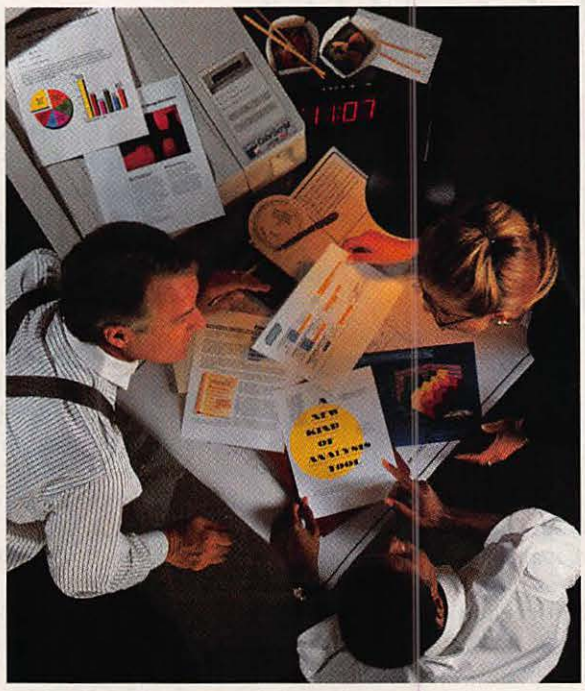


Square into Cubes The Cube Creator is used to transform precisely formatted text tables into HyperCubes for remote or local access. HyperCube development is a job for experienced relational-database designers.

June 14, 1963.
Cindy Smith plays with color.



Thirty years later her business depends on it.



Introducing the QMS ColorScript Laser 1000. Now your business has total freedom of expression.

For Cindy, communicating decision-critical information quickly, flawlessly and in brilliant color is now her livelihood. That's why she depends on the QMS ColorScript® Laser 1000 Print System. It frees her to print entire forms and letterhead with color logos, images and high quality text without changing paper. It saves her the cost of stocking special forms, letterhead and multiple sets of supplies and uses standard paper and transparencies. It improves her message by highlighting key data with color in multipage presentations and documents. Add direct connection to a variety of networks and anyone can realize both greater productivity and a per user cost that rivals personal printers. Plus, our easy software loadable upgrades virtually eliminate obsolescence.

Save money. Save time. Free yourself from limitations. Discover the advantages of the QMS® ColorScript Laser 1000 Print System.



• Laser color and monochrome printing • Compatibility with PostScript™ Level 2 and Level 1, HP PCL®5C and HP-GL® • TrueType font scaling • Automatic collation • Simultaneous input and automatic emulation switching • 65 resident type fonts • EfiColor™ and Colorimetric color dictionaries and Apple ColorSync™ device profile • Supports DOS, Windows,™ Macintosh® and Unix® applications • Software loadable system upgrades

Expression is a serious business.
Call QMS today at 800 392-7559 or 205 633-4300
for the name of a reseller demonstrating
the QMS ColorScript Laser 1000 in your area.

QMS

For service on QMS and other products, call 800 762-8894 (U.S.)
Q-Fax 800 633-7213 • E-mail: info@qms.com • Canada 800 263-5508

QMS, QMS ColorScript and the QMS logo are trademarks or registered trademarks of QMS, Inc. PostScript is a trademark of Adobe Systems Incorporated which may be registered in certain jurisdictions. All other product and company names mentioned are trademarks or registered trademarks of their respective companies.

Now under $10,000

InfoFAX

Please see page 207 for instructions.

Ray Dream Designer 3.0.3

3-D Illustration Software

PROS: Excellent texture editing; Modeling Wizard automates modeling; versatile free-form modeler. **CONS:** Unstable operation; misbehaving features; sluggish performance. **COMPANY:** Ray Dream (415/960-0768). **LIST PRICE:** $349.

MW ★★

AFTER RAY DREAM LOWERED THE price of Designer 2.0 last year, the package became an instant price/performance leader in its class, even though it needed to be renovated. Designer 3.0 is a complete refurbishment of the program, still at a commendably low price, but early releases have some wrinkles that need to be ironed out.

Ray Dream Designer 3.0 implements some well-considered architectural changes. Designer 3.0's consolidated modeling environment does away with the separate LightForge and SceneBuilder modules. Also, version 3.0 incorporates extensions, similar to plug-ins for graphics programs, that allow for adding new modeling tools and facilitate future expansion.

Ray Dream also improved Designer's controls for creating, editing, and combining textures, and added the ability to brush textures onto the surface of three-dimensional objects. The program remains an excellent ray-trace renderer and can produce images with G-buffer channels for 3-D filtering and compositing.

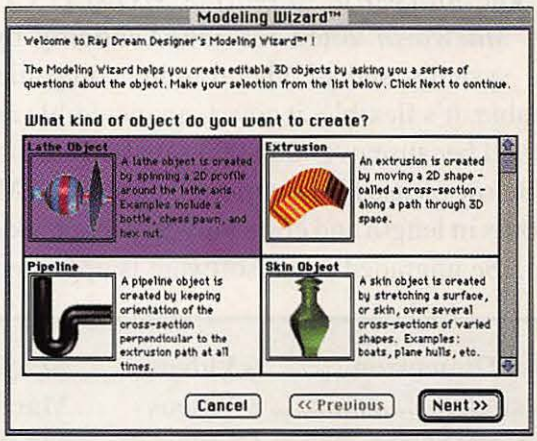
Designer 3.0's modeling environment starts with a 3-D perspective window where you build models and assemble scenes. As you add objects, lights, and cameras to the scene, icons representing them appear in the Hierarchy window, which displays a collapsible outline of the scene's logical structure. From the scene hierarchy, you can select objects, link them, and organize them into groups without navigating the scene to select them. Modeling tools, clip objects, and textures are extensions that appear automatically in the drag-and-drop Objects and Shaders Browsers.

Modeling extensions include a selection of object primitives, a text tool, the FreeForm tool, and the Modeling Wizard. Object primitives are simple, uneditable shapes such as spheres or cubes. The text tool creates objects from TrueType and PostScript Type 1 fonts and offers controls, including kerning and leading.

The FreeForm tool is similar to Designer's old LightForge modeler but more versatile. In a modeling window separate from the scene window, you create objects by drawing a shape on a working plane and extruding the object along an axis defined by path-description lines. You achieve more-complex constructions by adding cross sections and applying scaling envelopes that let you modify the surface contours of the object. The FreeForm tool is the heart of Designer 3.0, but learning the techniques takes practice.

Novice modelers will appreciate the Modeling Wizard. The automated Wizard lets you produce lathed, extruded, pipeline, spiral, twisted, and skinned objects via pictorial dialog boxes. Its step-by-step approach teaches you how shapes interact to produce objects. To edit Wizard-built objects you must return to the FreeForm tool.

Perspective view is Designer's default, but you can create new views, including elevations, simply by adding cameras. You fine-tune views in the Camera Settings floating window using buttons and sliders for adjusting focal lengths and controlling camera movements. If you could drag a new camera into the work space instead, and position the camera close to its final location, you could avoid much needless navigation.



Off to See . . . The Modeling Wizard automatically creates complex objects from your menu selections.

On a Mac IIfx, performance is sluggish, even in wire-frame mode. Working in the flat-shading Preview mode is slow, and Better Preview is even slower. Previews render in the background, but if you need to see the composition before you take your next action (such as moving an object, changing camera positions, or adding a texture), be prepared to wait while everything redraws. Flat shading takes longer still.

Scenes get visually cluttered, even in the preview modes, after placing just a few objects. The many bounding boxes and projection lines quickly turn a simple scene into a rat's nest. If you turn off the reference grids, the projection lines disappear, but you lose depth perception.

Designer 3.0 comes with both surface and procedural textures that you apply by dragging. The program also lets you paint textures directly on the surface of 3-D objects using brushes and geometric shapes. This sounds like a great feature, but it's so slow on my IIfx that it's frustrating to use. As you drag the brush, there is a delay that makes you wonder if the tool is working at all.

The Shader Editor's card-file metaphor provides wonderful controls for manipulating and combining textures. For example, you can combine a texture with a bump map to get a dappled surface, then mask it onto a checked pattern to produce a quilt effect.

The manual's descriptions lack depth and often deviate from the program's reality. Release notes (Read Me files on disk) chip at the problem but barely make a dent. Early releases of Designer 3.0 are confounded by annoying operational foibles and instability. For example, multiple-vertex outlines in the FreeForm modeler get extraneous lines between vertices. Reference planes turn themselves off when you switch camera views. Labels on the Camera Settings floating palette, such as front or left, inexplicably get changed to custom. Worse, sometimes the camera's viewpoint is altered. The brush and polygon painting tools behave unpredictably. The list goes on.

Ray Dream rapidly introduced releases; I reviewed both 3.0.2 and 3.0.3. The program still needs maintenance, but a Ray Dream spokesperson told me that the company is committed to its customers and will work to make the program sound.

Although Designer 3.0 remains a price leader, it has faltered significantly in performance. At the core of Designer are excellent rendering tools and a competent modeler. When the program's problems are rectified, that combination should hold it in good stead again.

—CARLOS DOMINGO MARTINEZ

Macintosh Training

Pure.
Simple.
Effective.
Inexpensive.
Award Winning!

The *Macworld Magazine* WORLD CLASS AWARD for training sits in my office. The readers of *Macworld* voted for **MacAcademy** by a margin of 2 to 1 over audio training systems, disk based systems, and all other training companies and products. Simply, we won because our training works! It's affordable, it's flexible, it covers an incredible amount of programs, it's simple to use and it's guaranteed! We won the award because over 250,000 satisfied customers are proof that MacAcademy training programs will work for you. Below please find a current listing of the MacAcademy Video Training Library. Each video is approximately two hours in length and costs only $49. Each video carries a complete money-back guarantee if not totally satisfied and can be upgraded when software is upgraded for only $14.95. *Randy Smith*

4th Dimension ..... 6 Videos	**MacDraw Pro ..... 2 Videos**	**Quicken, Personal .... 2 Videos**
Canvas ..... 5 Videos	**Mac P & L ..... 3 Videos**	**Quicken, Business .... 2 Videos**
ClarisWorks ..... 6 Videos	**MacProject Pro .. 4 Videos**	**QuickTime ..... 1 Video**
Design & Layout ..... 1 Video	**MacWrite Pro ..... 3 Videos**	**SuperPaint ..... 3 Videos**
Desktop/PrePress .... 2 Videos	**MS Works ..... 4 Videos**	**Troubleshooting ..... 3 Videos**
Director ..... 4 Videos	**Networking ..... 1 Video**	**Word ..... 4 Videos**
Excel ..... 5 Videos	**Now Contact/**	**WordPerfect ..... 4 Videos**
FileMaker Pro ..... 4 Videos	**Now Up-To-Date 1 Video**	
Mac Fonts ..... 1 Video	**PageMaker ..... 6 Videos**	**$49 each**
FreeHand ..... 4 Videos	**Peachtree Accntg.3 Videos**	
HyperCard ..... 3 Videos	**Persuasion ..... 2 Videos**	Live Training Workshops Available in 32 major cities throughout the United States. Please call for complete schedule and/or on-site corporate training.
Illustrator ..... 4 Videos	**Photoshop ..... 6 Videos**	
Infini-D ..... 2 Videos	**PowerBooks ..... 2 Videos**	
Integrate Programs. 1 Video	**PowerPoint ..... 2 Videos**	
Lotus 1-2-3 ..... 3 Videos	**Premiere ..... 3 Videos**	
Macintosh 7.X ..... 4 Videos	**QuarkXPress ..... 3 Videos**	

Video Training Available in English, Spanish, Japanese, German, & French
Video Training Also Available For Many Windows Programs

Please add $3 per order along with $1 per video for shipping and handling.

TOLL FREE ORDER LINE: 800-527-1914
ORDER FAX LINE: 904-677-6717
Checks, PO's, Credit Cards Accepted 48 Hour Delivery
100 E. Granada Blvd., Dept. MW794, Ormond Beach, FL 32176

MacAcademy®
"Where the world learns the Macintosh"

Circle 106 on reader service card

Ear Phone Streamline AV

Telephone/Speech-Recognition Earpiece

PROS: Better audio quality than provided by AV PlainTalk microphone; improves speech-recognition accuracy; unobtrusive design. **CONS:** User can't hear error beeps, modem tones, or other computer audio without unplugging or wearing the earpiece; some discomfort after prolonged use. **COMPANY:** Jabra Corporation (619/622-0764). **LIST PRICE:** $169.

MW ★★★

HISTORY HAS RECORDED FOR ALL time the first words that Alexander Graham Bell said to his assistant through the telephone: "Come here, Watson, I need you." But few people know that the great inventor also designed the first speakerphone. Upon hearing Bell through the contraption for the first time, Watson reportedly replied, "Hey boss, why are you talking into a coffee can?"

I have yet to hear a speakerphone that didn't sound like an empty can of Folger's, and that includes the speakerphone that's essentially built into the AV Macs and Power Macs. Plug an Apple GeoPort Adaptor into one of these Macs and you have a high-speed fax/data modem and a voice telephone, too. It's what some call *integrated telephony*. (*Telephony*, by the way, rhymes with *Stephanie*. A tele*phony* is someone who tells lies over the phone.)

Jabra's Ear Phone Streamline AV takes the coffee can out of integrated telephony and replaces it with some privacy. The Ear Phone looks like, well, an earphone—the kind that lets you listen to TV without waking the spouse—but it also contains a microphone sensitive enough to pick up your voice. A 6-foot cable terminates in a tiny black box, from which extend two short cables; one plugs into the Mac's microphone jack and the other, into the audio jack. You can connect an Ear Phone in less time than it took to read this paragraph. (You can also connect an Ear Phone to an Apple AudioVision 14 display, but configuring the monitor's control panel for the proper sound levels is a bit cumbersome. It's easier to use the Mac's rear-panel jacks.)

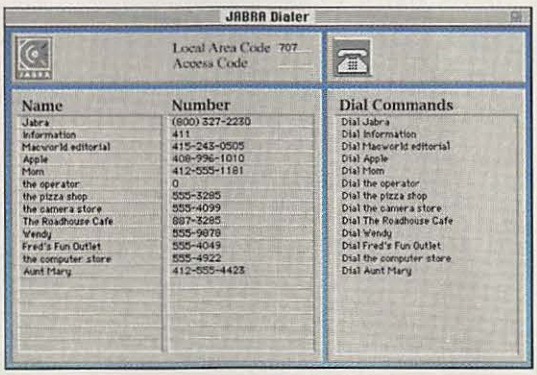
Making Calls

What's it like to wear this thing? It's reasonably comfortable, although it began to bother me after about an hour. A small foam cover makes the earpiece—the ear bud, as Jabra calls it—more comfortable than a typical earphone. For the fashion conscious, Jabra sells replacement foam covers in various colors.

The Ear Phone also includes plastic loops in several sizes. The loop snaps onto the ear bud and then hooks over the top of your ear to hold the ear bud in place. The Ear Phone box also contains a coupon advertising a custom ear mold available from Westone Laboratories (719/540-9333). Replacement ear molds are available for approximately $35 each.

The Ear Phone includes a simple telephone-dialer application that stores up to 20 phone numbers and lets you assign a spoken command to each one. The dialer works together with Apple's Apple Phone application (which is included) to let you issue spoken commands such as "dial home" or "dial the office."

Using voice commands to make calls would be more practical if you could dial numbers stored in contact databases and other documents. The AV version of the Ear Phone doesn't permit this, but a forthcoming Power Mac version will. The new version, which should be available by the time you read this, will use Apple's Telephone Manager—a system software extension that implements telephony-related functions—to enable you to dial a number regardless of where it's stored, and to do so with spoken commands, at that. After releasing the Power Mac version, Jabra may add this capability to the AV Mac version, but at this writing Jabra hasn't decided on a schedule.



Make a Call for Me The Jabra Dialer application lets you store up to 20 phone numbers and dial them with spoken commands, shown at the far right of the dialer window.

At the other end of the line, the Ear Phone sounds like a standard telephone, with none of that coffee-can echo that speakerphones generate. (If you're interested in hearing a demo, I've created a short, sound-only QuickTime movie that compares the Ear Phone to the standard Apple PlainTalk microphone. You can download the movie from the Macworld Online forum on America Online. Once in the Macworld Online forum, click on the Software Library icon.)

The PlainTalk Angle

Unlike any other third-party microphone I know of, the Ear Phone Streamline AV works with the PlainTalk speech-recognition features that are standard equipment in AV and Power Macs. In my tests, conducted on a Quadra 840AV, speech recognition was indeed more accurate. One reason is that the Ear Phone's microphone is always the same distance from your mouth—this generally isn't the case with the Apple PlainTalk microphone.

Another reason is that a system extension included with the Ear Phone modifies the audio levels going into the Mac for better recognition. By fine-tuning the volume levels, Jabra engineers—some of whom worked for Articulate Systems, a pioneer of Mac voice-recognition products—have made real improvements in PlainTalk's accuracy.

There's a side benefit to using the Ear Phone for speech recognition: only you can hear the computer's spoken responses. If you're using PlainTalk's text-to-speech capabilities to, say, read your incoming electronic mail, you need not worry about coworkers overhearing your Mac—or your Mac annoying your coworkers.

You Can't Hear Unless You Wear

Perhaps the biggest drawback of the Ear Phone is that because it disables the Mac's speaker, you can't hear all the other Mac sounds—like when the modem makes a call and connects, or when an audio CD plays in play-through mode—unless you unplug or wear the Ear Phone. This is a side effect of having a computer that also acts as a telephone and a modem and a CD player. The fact remains, though, that the unplug-and-plug routine is tiresome, not to mention hard on the Mac's jacks.

The Ear Phone's simple appearance and straightforward operation belie the engineering efforts that went into it. As a hands-free telephony tool—and as a replacement for the Apple PlainTalk microphone—the Ear Phone AV is a winner.—JIM HEID

Kai's Power Tools™ 2.0

Divine the Future of Imaging

Everything's brighter when you plug in the award-winning Kai's Power Tools to leading image editing packages like Photoshop, Painter and Pixel Paint Pro. Thirty-three fantastic extensions and filters give you one-step solutions to complex graphics production jobs. And the power to summon dynamic gradients, infinite textures and awesome fractals for unlimited creativity. It's serious graphics made fun!

And now a great standalone value!

Every copy of Kai's Power Tools includes Micro Frontier's award-winning Color-It!, a 32-bit image processing and paint program—a $149.95 value absolutely FREE!

Ask for KPT 2.0 at fine resellers, including:

CompUSA
800.COMPUSA

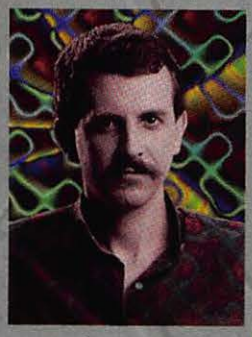
Computer City
800.826.3928

Computerware
800.326.6092

Kai's Power Tools 2.0
SRP: $199
Upgrades from Version 1.0: $49
Call 310.392.8441

HSC Software
1661 Lincoln Blvd. Suite 101
Santa Monica, CA 90404
310.392.8441
fax 310.392.6015
"Talk to us on America Online."
Keyword: HSC or KPT.

See Kai's Power Tools and KPT Bryce inside the HSC Digital Theatre (booth #1020) during Macworld Boston, Aug. 2-5, 1994.



Lee Varis
Digital Artist

"KPT is not only great for dazzling special effects, but it provides a wealth of tools for the nuts and bolts work we all do every day."

About the Image. Renowned digital artist/photographer Lee Varis of Los Angeles, Calif., filled in the world of "The Hermit", one in his series of haunting tarot card images, using Kai's Power Tools. The KPT Gradient Designer produced the glowing orb and its cascading rays, the KPT Texture Explorer created the card's border, while the KPT Sharpen Intensity filter brought out details in the rock. To build the dream-like landscape on the horizon, Varis used a beta version of the awesome KPT Bryce™, a powerful natural and supernatural 3-D landscape creation program—coming soon from HSC Software.

November 1993 MacWEEK ★★★★★

MACWORLD MW ★★★★★ May 1994

★★★★★ Publish March 1994

NewMedia Magazine AWESOME April 1994

HSC SOFTWARE

© 1994 HSC Software Corp. HSC is a registered trademark, and Kai's Power Tools and KPT Bryce are trademarks of HSC Software Corp. All other product names are trademarks or registered trademarks of their respective owners.
"The Hermit" © 1993 Lee Varis. Used with permission.

Circle 5 on reader service card

QMS ColorScript Laser 1000

Color Laser Printer

PROS: Durable output; versatile paper-handling and networking features; low cost-per-page. **CONS:** Complex engine requires more maintenance than monochrome lasers. **COMPANY:** QMS (205/633-4300). **LIST PRICE:** $9999.

MW ★★

THE QMS COLORSCRIPT LASER 1000 breaks new ground: it's the first color laser printer to sell for under $10,000 (even if it is just a dollar under), and it's the first color laser printer for the desktop (if your desktop can hold a large picnic cooler that weighs 106 pounds).

The ColorScript Laser 1000 uses an 8-pages-per-minute, 300-dots-per-inch print engine whose single paper tray can hold 250 sheets. (A second tray is optional.) The printer comes with 12MB of memory (expandable to 32MB), a 60MB internal hard drive that stores downloadable fonts and incoming print jobs, and 65 fonts. Built-in network ports include LocalTalk, Centronics parallel, and serial; Ethernet and Token Ring network interfaces are optional.

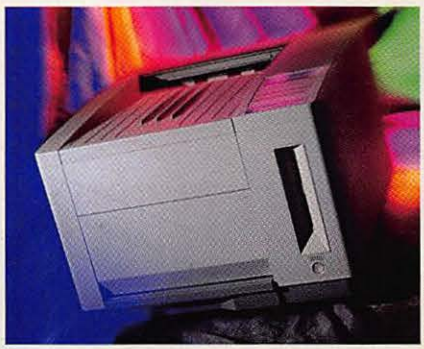
The ColorScript Laser 1000 is about four times as complex to set up as a monochrome laser: you need to install four developer cartridges, four toner cartridges (cyan, magenta, yellow, and black), a cleaning pad, a bottle of oil (it keeps the toner from sticking to the printer's heat rollers), a photosensitive belt, and a hopper that holds waste toner. These consumables need to be replaced at varying intervals: every 3000 pages for the oil, for instance, and once a year or so for the belt.

As with a monochrome laser printer, the time between toner feedings varies—pages with a lot of color or black use more toner than do pages containing very little. This contrasts with thermal-wax and dye-sublimation machines, which use the same amount of ink ribbon for each page regardless of a page's contents. This, and the ColorScript Laser 1000's ability to use conventional photocopier bond paper, makes the machine's cost-per-page significantly lower than that of thermal-wax and dye-sub technologies—roughly 5 to 10 cents per color page, compared with about 60 cents for thermal-wax, and several dollars for dye-sub.

How does the output look? Very good. The colors aren't as vivid as those produced by competing technologies, but they're perfectly adequate for business documents—bar charts, colored headlines, and transparencies. The printer's text quality is almost as sharp as that produced by a monochrome laser printer, and generally sharper than thermal-wax and dye-sub output. The print is also more durable than ink-jet or thermal-wax output: it doesn't smear if it gets wet (ink-jet output sometimes does), and it's nearly indestructible: unlike the wax applied by thermal-wax machines and the ink from solid-ink printers such as Tektronix's 300i, the ColorScript Laser 1000's color toner doesn't scratch off when you paper-clip it, or flake when you fold it.

The ColorScript Laser 1000 also fared well on Macworld Lab's test track, although its overall performance was half that of Tektronix's Phaser 220i, the fastest thermal-wax machine available. The printer was particularly slow in the Photoshop test. Further incentive to look elsewhere for prepress work is that the printer doesn't do as good a job with scanned images as do thermal-wax machines (such as Tektronix's Phaser 200 series) that provide enhanced halftoning options. Also, color laser technology doesn't allow for as much consistency in color as do the thermal-wax, solid-ink, and dye-sublimation techniques.

Macworld Lab encountered a compatibility glitch with the ColorScript Laser 1000, which uses a PostScript-clone interpreter. In its PostScript Level 2 mode, the printer choked on a Microsoft PowerPoint document with Microsoft's Wingdings TrueType font (similar to Zapf Dingbats). In Level 1 mode, the same document printed without incident. QMS was able to reproduce the problem, but at press time had not yet isolated it.



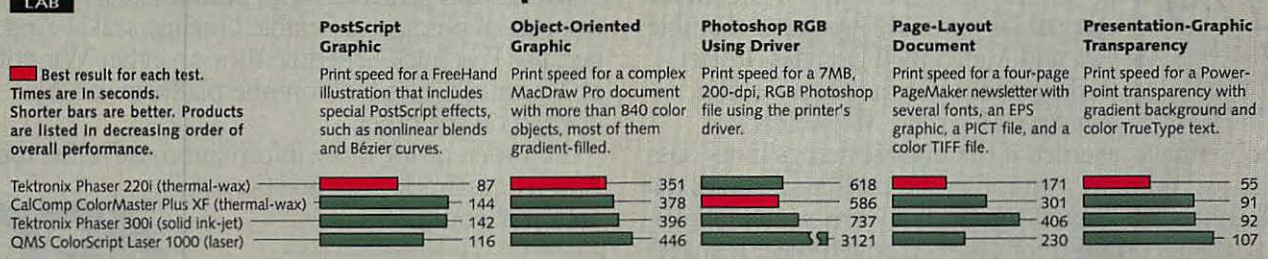
SCOTT PETERSON

The ColorScript Laser 1000 succeeds in combining the versatility of monochrome laser printing with attention-getting color. Business documents look great—don't be surprised to see people gaze at them up close and ask how you printed them. A ColorScript Laser 1000 is too slow to replace a monochrome workgroup printer, although for business documents its output is in the same league. It's also ideal for short runs of color documents—printing 50 copies of a presentation, for example.

Note that other firms, most notably Hewlett-Packard, are expected to unveil color lasers soon. If you don't need to chase rainbows right away, you might wait and see if the competition drives prices down and capabilities up.—JIM HEID

MW LAB How Fast Is the QMS ColorScript Laser 1000?

Best result for each test. Times are in seconds. Shorter bars are better. Products are listed in decreasing order of overall performance.



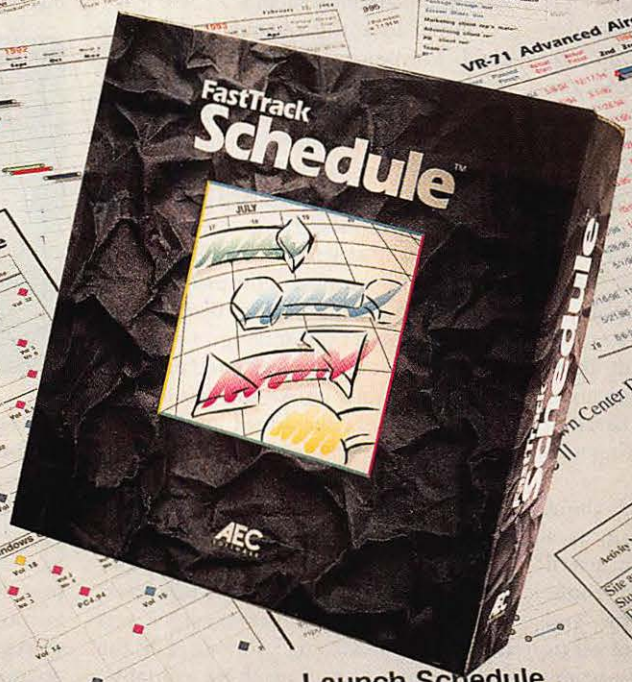
BEHIND OUR TESTS Printers were tested with a Centris 650 with System 7.1, LaserWriter Driver 8.1, 8MB of RAM, a Quantum LPS230 internal hard drive, AppleTalk on, and background printing off.—**Macworld Lab testing supervised by Mark Hurlow**

"FastTrack Schedule...matches or exceeds the competing products in all aspects of project scheduling."—*Windows Magazine*

"If you're looking for a quick and easy way to create Gantt charts, this program might be just the one for you."—*MacUser*

"...An excellent choice for anyone whose primary need is to create precise, presentation-quality Gantt charts."—*MacWEEK*

THE PROJECT SCHEDULING SOFTWARE THAT'S TOPPING THE CHARTS.



Special Offer:
$179
Money Back Guarantee

FastTrack Schedule from AEC Software is so quick, powerful and easy to use, no wonder it's a hit with Fortune 500 companies like 3M™, Procter & Gamble, GE, and McDonnell Douglas. In fact, leading computer publications like *Windows Magazine, MacWEEK* and *MacUser* have awarded it the highest ratings in its class.

In just minutes, you can create project schedules that will enhance both your productivity *and* presentations. Plus, there's no need for cumbersome project management packages or time-consuming drawing programs.

Simply click and drag–or use your keyboard–to create start and end dates. Outline multi-level tasks and link activities to show dependent steps. Further enhance your schedules with custom bars, milestones, colorful graphics, and flexible timeline scales. And because FastTrack Schedule runs on either Windows or Macintosh, files built on one platform can be opened on the other.

To order, or for more information, call AEC today. And let FastTrack Schedule put you on top of your projects.

800-450-1982

AEC SOFTWARE

AEC Software, Inc., 22611-113 Markey Court, Sterling, Virginia 20166 • Telephone: 703/450-1980 • Facsimile: 703/450-9786. ©1994 AEC Software, Inc. All rights reserved.

Circle 44 on reader service card

IX-4015 Color Image Scanner

Color Flatbed Scanner

PROS: Good image quality; fast scans; excellent bundled software; small footprint. **CONS:** Scan size limited to 8.5 by 11.7 inches. **COMPANY:** Canon Computer Systems (714/438-3000). **LIST PRICE:** $1169.

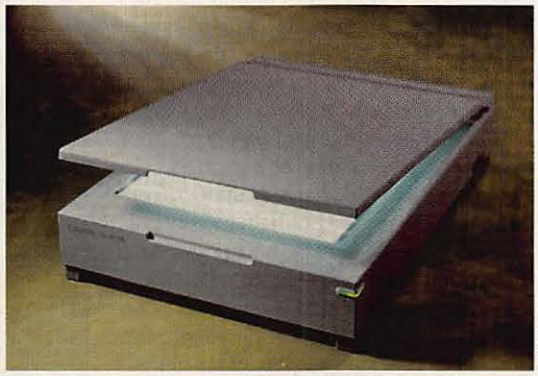
MW ★★★★

THE CANON IX-4015 COLOR IMAGE Scanner is a 24-bit color scanner that delivers good-quality scans and is easy to use. The IX-4015 scans at an optical resolution of 400 dots per inch by 800 lines per inch, and provides interpolated resolutions of 800 dpi for color scans and 1200 dpi for line art. Scanning software consists of IX Scan (an Adobe Photoshop–compatible plug-in) and Light Source's Ofoto 2.0. The unit comes with all the cables you need for hookup. An optional automatic document feeder (not tested) is available if you will be doing OCR work. The IX-4015's conveniently small footprint (16 by 11.2 by 3.2 inches) is also a bit of a limitation, because the scan area is confined to A4 size (8.5 by 11.7 inches).

Setup was easy, helped by the good documentation and quick-start guide. The scanner is rather unusual in that it has both of the common types of SCSI connectors on the back: a 50-pin plug as well as a DB-25 connector. (Most SCSI devices have two identical ports.) The two ports on the IX-4015 worked normally; I was able to daisy-chain another SCSI device from the scanner without problems.

The IX-4015 is a one-pass scanner, which accounts for its fast scan times. Using IX Scan within Photoshop, prescans of an 8-by-10-inch gray-scale photo at 400 dpi took about 20 seconds, and the actual scan took 55 seconds. Color photos at the same resolution had the same fast previews, but took approximately 135 seconds to scan. Using Ofoto to scan is considerably slower, doubling the IX Scan times.

IX Scan is a well-designed scanner interface for Photoshop (see "Get the Picture"). After prescanning, you can crop the scan area using the selection rectangle. IX Scan allows you to set the print and scan resolutions, and includes contrast, brightness, and threshold controls. You can also change the gamma curve and dither pattern of your scans. The only thing amiss with the plug-in is that it shows the size of the selection rectangle in pixels instead of the more useful inches or centimeters. You can also simulate gray scale from line art with the Dither and Error Diffusion settings. IX Scan produces clean black-and-white images, as well as good-quality 8-bit gray-scale and 24-bit color scans. While IX Scan is convenient for Photoshop users, using Ofoto provides superior scans. Ofoto's automatic straightening, cropping, moiré removal, and calibration features make scanning an easy but slow process (for more on Ofoto, see *Reviews*, *Macworld*, July 1993).



PAUL BERG



Get the Picture IX Scan makes it easy to acquire scans from within Photoshop and provides a wealth of image-adjustment controls. It even estimates how much disk space your scan is likely to take up.

Canon's toll-free technical support was adequate but not stellar. The technician I spoke with was helpful, but wasn't familiar with the product and needed to ask other staff members for help. I did get my questions answered correctly, but it took a while.

The IX-4015's price is competitive with other color scanners, and its speed and excellent bundled software make it easy to use and a good choice for the small office. If you can get by without legal-size scans, this scanner should serve you well.—TOM NEGRINO

TopDown 4.0

Flowcharting Program

PROS: Automatically creates lower-level charts; clustering of symbols reduces chart clutter; increased speed draw; eight user-definable symbol palettes. **CONS:** Only black-and-white icons. **COMPANY:** Kaetron Software Corporation (713/298-1500). **LIST PRICE:** $345.

MW ★★★★

TOPDOWN FLOWCHARTER 4.0 INcludes the standard flowcharting features, such as multiple symbol palettes, a palette of ANSI symbols, custom symbol creation, custom line-styling, and multipage drawings. It's what TopDown adds on top of the standard features that makes it a more productive tool.

TopDown allows you to quickly create a flowchart by doing many things automatically: drawing identically sized symbols wherever you click, joining symbols, routing connector lines, numbering symbols. If you're brainstorming, StarBurst mode lets you automatically link subsidiary ideas or topics in a tree or hierarchy. Creating an organization chart is a breeze with this option enabled. You can, of course, always use the manual override for any automatic option.

Although flowcharts present processes and information graphically, documentation of a flowchart can also be an issue. To solve this problem, TopDown allows you to create a Notecard of up to 32,000 characters for each symbol used on a flowchart. In addition to printing each Notecard, TopDown can generate an outline report listing all symbols and their associated text, a cross-reference report listing each symbol and any symbols attached to it, and an error report listing symbols that have data coming in (an arrow points to the symbol) but no data coming out (there is no arrow pointing away from the symbol).

Flowcharts have a tendency to become large and cluttered. TopDown provides four features to help deal with clutter and unwieldy diagrams. First, you can split any chart's window into four panes that allow you to see four different areas of the chart. Second, you can create an anchor that acts like a bookmark; the Go To Anchor command takes you to the anchor location automatically. Third, you can create an overview chart in which each symbol represents a lower-level chart. (The number of lower-level charts is limited only by the memory available

continues

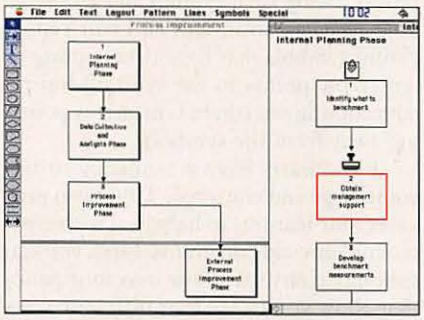
to the program.) Last, with the Cluster command you can select a group of symbols and their connecting lines and automatically paste them into a lower-level chart; TopDown replaces the clustered symbols with a single symbol on the original diagram. This option is particularly convenient for reducing clutter.

TopDown provides several ways to navigate lower-level diagrams. You can select a symbol to represent a more detailed lower-level diagram; TopDown then draws this symbol with a shadow to show that a lower-level chart is linked to it. The lower-level chart automatically opens so that there are now two windows on the screen. Clicking on the chart's title takes you to a hierarchical menu listing all open drawings; you can also select a chart from the Show Hierarchy command.

Although TopDown supports a maximum of nine symbol palettes, including the ANSI palette, you probably won't want to use all of the available palettes in one flowchart—rotating through all the palettes is counterproductive.

TopDown also has tools for custom symbols. One way is to create 32-by-32-pixel black-and-white icons that become part of a symbol. In addition to using the FatBits editor (included in TopDown), you can open any paint file from within TopDown and select a portion of the drawing to be an icon, or you can create custom symbols with TopDown's drawing tools. Once you have drawn and saved these icons, you can resize and enter text in them just as with the standard symbols.

I recommend TopDown, both for its power and its ease of use. TopDown's support for custom symbols, multiple palettes, and automatic drawing aids, along with its ability to let you easily create and navigate lower-level charts, make it tops in my book.—DAVE KOSIUR



Two Layers The left-hand window shows the main flowchart split into two panes so that the top few symbols and the bottom symbol are visible. All the symbols in the main chart have shadows, indicating that lower-level charts are linked to them. The window on the right is a lower-level flowchart representing the Internal Planning Phase (symbol 1) from the other chart.The first and second symbols have custom icons.

WaterMark Message Central 2.0.2

Voice-Mail System

PROS: High-quality voice-mail setup; decent fax capability. **CONS:** Poorly written manuals; lacks support for multiline systems; modem limited to 2400-bps voice; terminal software lacks good scripting tools and Zmodem support. **COMPANY:** High Tide Software (510/704-9927). **LIST PRICE:** $499; 14,400-bps modem $100.

MW ★★★

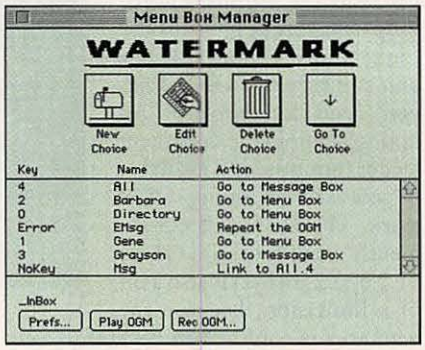
ON THE SURFACE WATERMARK Message Central sounds really good. It's a highly sophisticated voice-mail and messaging system that includes a specially modified modem with voice chip, as well as fax software and regular telecommunications software. And it all comes in one box, ready for installation. Unfortunately, the program's very poor documentation is its one serious weakness. You're likely to need support from your dealer or the publisher's support people to get this program up and running. Still, if you're willing to put in some effort to learn the program, you'll find WaterMark Message Central a supremely flexible tool. It's of particular benefit to many small-business users, as well as to families for whom a normal answering machine just won't do. (At press time, High Tide announced version 2.1.1 with support for a pager and call forwarding.)

WaterMark Message Central offers basic answering-machine capabilities, such as the ability to record your messages and retrieve them from your computer or via a remote touchtone phone. It adds the ability to create separate voice-mailboxes—for example, one for each employee in your company, or for each family member. You can link each mailbox to other mailboxes, allowing the caller to select from a multitude of options. Just as with the more expensive systems used by large businesses, WaterMark prompts the caller to select a specific choice. One such option allows callers to access messages left specifically for them by typing in the last four digits of their phone number. To ensure privacy, you can assign each mailbox its own password for retrieving messages.

WaterMark Message Central also includes a decent fax program, which can be used separately to send and receive faxes or as a fax station linked to the voice-mail system. The fax station lets callers leave a voice message and send a fax with the same phone call.

To keep this program from ending up as just an overpriced answering machine, you have to spend up to several hours configuring and testing your settings. You set up the voice mail using the WMController application. Once configured, WaterMark works quite well. Outgoing and incoming messages reproduce clearly and distinctly at a volume level that matches that of a regular phone call. The whole network of nested messages and reminders worked flawlessly during my tests. The program puts up a flashing icon at the right of the menu bar showing the number of messages it has received. You can play back these messages (through the modem's speaker) or save them as document files for later review.

There are some downsides. The biggest one is that the program supports



Setting Up Your Voice Mail You use the WMController application to record outgoing messages and configure voice mailboxes.

only one phone line. Also, when a call is received or a fax sent, the program puts up a modal (nonmovable) dialog box that prevents you from using your Mac till the action is finished. If you want to use the recommended High Tide High Quality sound capability, you have to turn off AppleTalk. The program is probably most effective on a dedicated Mac.

A no-frills communications program, Communicate Lite from Mark/Space Softworks, is included. The program works well, but lacks scripting tools and support for any file-transfer protocols beyond the basic Xmodem.

WaterMark Message Central is not going to be everyone's cup of tea. Unless your needs extend far beyond a normal answering machine's capabilities, it may not be worth the time and energy involved in the initial setup process. But if you are running a small business, or your family has complicated voice-messaging needs, and if you are willing to put in a little time and effort, you'll find it a very useful product.—GENE STEINBERG

Now You Can Get

The First and Still the Best. Since 1984,

MacConnection has pioneered many of the services that have set the standards for Macintosh mail order today like,

$3 Overnight Shipping
Money-back Guarantees (★)
Toll-free Technical Support

And, we stock more than 3500 different products for your Mac; if you don't see what you need here, just give us a call.

HOURS:
8 a.m. Monday continuous thru 5 p.m. Sunday ET



VST Power Systems

Run your PowerBook for 5 to 9 hours with the *ThinPack Complete*. Includes ThinPack rechargeable battery, utilities software, cable, and more. *ThinPack Plus* packs twice the power! Ideal for color PowerBook users.

2634 *VST ThinPack Complete* **$189.95**
2636 *VST ThinPack Plus* 269.95

Call for a FREE catalog!
800-800-3333

POWERBOOK/NEWTON

Apple Computer
1332 Apple Newton MessagePad 110.... $599.
ASD Software
15864 Wiz Tools for PowerBook..... 59.95
★ **Battery Tech., Inc. ... 30 day MBG**
7562 140-180 Batt. 59.95 10392 Charg. 64.95
★ **Connectix ... 30 day MBG**
8441 CPU 2.0..... 55.
★ **Global Village ... 30 day MBG**
7720 PowerPort/Silver 269. 7710 /Gold 299.
★ **Kensington Cases ... 30 day MBG**
14018 Tote.... 35.95 9585 Executive..... 115.
Lind Electronic Design
14587 SBC-2 139.95 14841 BL4-200 179.95
★ **Sophisticated Circuits ... 30 day MBG**
7425 PowerPad Granite 69.95
★ **Targus Cases ... 60 day MBG**
11207 Leath. PB Case 95. 1305 Universal... 69.
Technoggin, Inc. ... 30 day MBG
14014 PowerPlate 3X 219.95 14015 5X 279.95
14013 PowerPlate Mini 3..... 154.95
U.S. Robotics
11841 WorldPort 14.4 Fax..... 269.
★ **VST ... 30 day MBG**
2634 ThinPack Complete 189.95
2636 ThinPack Plus 269.95
★ **Zoom Telephonics ... 30 day MBG**
10267 FaxModem PBK144 ..... 199.95

BUSINESS

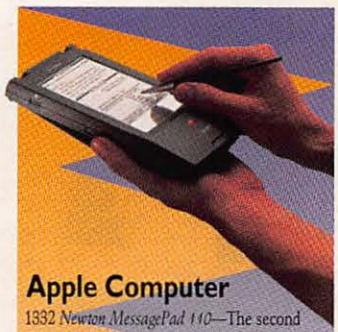
Abacus Concepts
7106 StatView 4.01..... 439.
★ **Aldus ... 30 day MBG**
11558 TouchBase or 11557 DateBk. Pro *ea.* 49.
11559 TouchBase Pro/DateBook Pro 89.95
★ **Attain Corporation ... 60 day MBG**
8465 In Control 3.0..... 85.
★ **Best! Ware ... 30 day MBG**
14187 M.Y.O.B. 55. 14188 w/Payroll ... 109.95
★ **Cambridge Sci. Comp. ... 30 day MBG**
15014 ChemOffice Plus 2.0 ..... 1199.
★ **CheckMark ... 60 day MBG**
5863 MultiLedger 229. 5862 Payroll..... 169.
★ **Claris ... 30 day MBG**
3903 ClarisWorks 2.1 for Mac 199.95
3836 FileMaker Pro 265. 14732 MWrite Pro 95.
Creative Think
14540 Creative Whack Pack..... 29.
★ **DeltaPoint ... 30 day MBG**
12974 DeltaGraph Pro 3 ..... 139.95
15819 DeltaGraph Pro 3 Comp. Upgrd. ... 79.95
Gold Disk
12279 Astound ..... 249.
★ **Inspiration ... 30 day MBG**
11269 Inspiration 4.0..... 165.95
★ **Intuit ... 30 day MBG**
11845 Quicken 4.0..... 39.95
★ **MECA ... 60 day MBG**
2796 Managing Your Money 6.0..... 35.
★ **Microsoft ... 30 day MBG**
2884 Works 3.0 155. 4902 Word 5.1..... 295.
3669 Excel 4.0 295. 5454 MS Office 3.0 475.
★ **Now Software ... 30 day MBG**
1793 Now Up-to-Date $65. 2366 *(10 pk.)* $519.
14027 Now Up-to-Date & Now Contact ... 99.95
★ **Palo Alto ... 60 day MBG**
6975 Bus. Plan 75. 4690 Mkt. Plan Tlk. 75.
★ **Paradygn Concepts ... 30 day MBG**
HomeWorks MS or ClarisWorks *ea.* 37.95
14978 HomeWorks Microsoft Works 37.95
★ **ProVUE ... 60 day MBG**
4582 Panorama 249. 11540 PowerTeam 95.
★ **Symantec ... 60 day MBG**
7636 ACT! *(contact manager)*..... 169.
★ **WordPerfect ... 30 day MBG**
4421 WordPerf. 3.0A 299.95 4481 Upg. 74.95

GRAPHICS & DESIGN

Adobe
4145 Adobe Premiere 3.0 ..... 449.95
12435 Illustr. 389.95 12886 Photoshop 549.95
★ **Aldus ... 30 day MBG**
13711 Home Publisher 2.0.1 ..... 44.95
11548 PageMaker 579.95 10864 Upgrd. 145.95
15021 Aldus Persuasion 3.0..... 324.95
1330 FreeHand 389.95 4728 Upgrd. 145.95
1306 Aldus Paint & Publish Bundle 84.95
Altsys
1195 Fontographer 258.95
Apple Computer
3008 Apple Font Pack..... 45.95
Broderbund Software
13603 Print Shop Deluxe 49. 3572 Kid Pix 34.
★ **Claris ... 30 day MBG**
14158 Impact or 2518 MacDraw Pro *ea.* 269.
Corel
7850 Corel Gallery 34.95
★ **Deneba Software ... 30 day MBG**
11055 artWORKS 99. 3227 Canvas 3.5 259.
Fractal Design
10402 Painter 2.0A 265. 1564 PainterX2 94.95
★ **Harvard Systems Corp. ... 30 day MBG**
11193 Kai's Power Tools for Photoshop 119.95
Imageline, Inc.
14438 Super Bundle EPS *(840 images)*... 94.95
14457 Value Pak 1 EPS *(640 images)*..... 64.95
★ **Light Source ... 30 day MBG**
11059 OFOTO 2.0 ..... 199.95
★ **Manhattan Graphics ... 30 day MBG**
4990 Ready,Set,Go! 6.0..... 219.95
Quark
7612 QuarkXPress 3.3..... 589.95
★ **Ray Dream ... 30 day MBG**
12264 JAG II..... 89. 4761 Designer 3.0 249.
SoftMaker, Inc.
10556 definiType Plus 52.95
★ **T/Maker ... 30 day MBG**
ClickArt *(bitmapped)* 34.95 *(EPS)* 55.95
3144 Incred. Images or 3147 CD-ROM *ea.* 89.95

PROGRAMMING/UTILITIES

★ **Abbott Systems ... 30 day MBG**
5236 CanOpener 2.0 59. 9578 Kaleidoscope 25.
★ **Aladdin Systems ... 30 day MBG**
7410 StuffIt SpaceSav. 34.95 6740 Deluxe 69.
Apple Computer
1206 At Ease 45.95 7072 QuickTime Kit 75.95
1074 System 7.1 59.95 13047 S7 Pro 99.95
10478 System 7.1/Font Pack Bundle ..... 62.
ASD Software Security Trio
15865 FileGuard/TrashGuard/FileDuo 149.95
★ **CE Software ... 60 day MBG**
1727 CalendarMaker 39. 7927 QuicKeys 105.
★ **Central Point ... 30 day MBG**
5041 MacTools 3.0 85.95 11812 Upgd. 49.95
★ **Connectix ... 30 day MBG**
14789 RAM Doubler or 7830 Maxima 3.0 *ea.* 55.



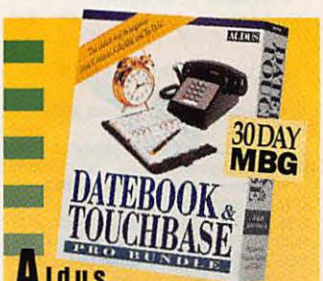
Apple Computer

1332 *Newton MessagePad 110*—The second generation is here! Sleeker, more compact; better handwriting recognition; longer battery life; more memory. Weighs just 1.28 pounds. Various accessories and software also available. **$599.**



COREL

7850 *Corel Gallery*—Easy-to-use visual clip-art manager on CD-ROM. Easily copy and paste images into any application that supports PICT format. Includes over 10,000 high-res clip-art images. **$34.95**



Aldus

11559 *DateBook/TouchBase Pro Bundle*—Total personal information management. Organize your calendar, to-do list, and complete contact information. Sort and prioritize tasks, maintain contact histories, track phone calls, and much more. **$89.95**

MDS Drives



MDS Zero Footprint Hard Drives—Add storage and performance to your Mac with a compact, reliable MDS Zero Footprint *(ZFP)* Hard Drive. They give you acres of data storage without taking up valuable acreage on your desk! And they're easy to install, with no jumpers or DIP switches to set. Features include a sturdy metal case, two SCSI ports *(for daisy chaining)*, two switched AC outlets, and a 2-year warranty. Includes a SCSI cable and FREE *Hard Disk ToolKit Personal Edition* formatting software.

15814 *270MB ZFP Hard Drive* **$349.95**
15813 *340MB ZFP Hard Drive* **429.95**
11863 *540MB ZFP Hard Drive* **599.95**
15117 *1.2GB (Fujitsu) ZFP HD* **959.95**
2219 *1.08GB (Quantum) ZFP HD* **1029.95**

30 DAY MBG

MacConnection®

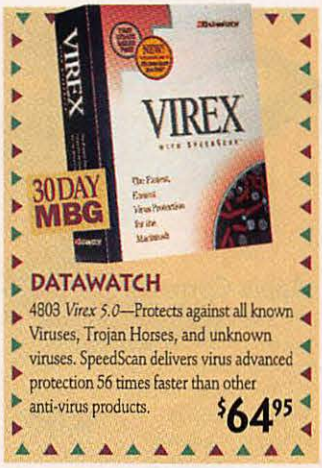
800-800-3333

794MW

MEMBER DIRECT MARKETING ASSOCIATION

14 Mill Street, Marlow, NH 03456
SALES 603-446-3333 **FAX** 603-446-7791

Apple Peripherals



DATAWATCH

4803 *Virex 5.0*—Protects against all known Viruses, Trojan Horses, and unknown viruses. SpeedScan delivers virus advanced protection 56 times faster than other anti-virus products. **$64.95**



MDS Drives

MDS Removable Drives (20ms average access time) includes FWB's *Hard Disk ToolKit PE.*

15097 *MDS 44MB (w/out cart.)* **$239.95**
15802 *MDS 88MB (without cartridge)* 299.95
10590 *88c (also R/W 44, 88MB cart.)* 469.95



Don't just read *Stewart Cheifet* about new computer products... Watch them in action on:

COMPUTER CHRONICLES

MacTV PCTV

For schedule information call:

1-603-863-9322



SyQuest Cartridges

Reliable, high-capacity, long-life, interchangeable removable media. Also available in 3, 5, 10 *(listed)* packs at big savings!

5912 *44MB* **$65.** 9728 *(10)* **$615.**
3603 *88MB* **100.** 3600 *(10)* **950.**
11711 *105MB* **59.95** 11708 *(10)* **549.95**

★ **Dantz Development ... 30 day MBG**
9115 DiskFit Direct 1.0 $29. 3393 Pro $72.
5255 Retrospect 145. 7945 Remote 2.0 259.
★ **Datawatch ... 30 day MBG**
4803 Virex 5.0 64.95 11486 SuperSet Util. 94.95
★ **Dayna Comm. ... 60 day MBG**
15773 ProFiles 1.0 ..... 79.
FWB, Inc.
2999 Hard Disk ToolKit 125. 7929 Pers. 49.
1165 RAID ToolKit ..... 639.
★ **Golden Triangle ... 30 day MBG**
11731 TimesTwo *(1.44)* 49.95
14294 w/TouchBase or 14293 w/DateBook 85.
★ **Inline Software ... 30 day MBG**
15849 PopupFolder 34.95
15850 TimesSquare 49.95
7068 INITPicker or 1740 Redux Deluxe 49.95
★ **Kent Marsh Ltd. ... 30 day MBG**
9513 FolderBolt 73. 1839 NightWatch II 89.
Metrowerks, Inc. CodeWarrior
15444 Bronze..... 199. 15446 Gold ..... 399.
MicroMat Computer Systems
3732 MacEKG II... 89. 2998 DriveTech.... 42.
★ **Now Software ... 30 day MBG**
12303 Now Compress 46. 12304 FUN!.... 29.95
6925 Now Utilities 4.0 ..... 84.
★ **Symantec ... 60 day MBG**
3955 Suitcase 53. 14244 SuperDoubler 79.95
5176 SAM..... 65. 6748 NUM..... 95.

EDUTAINMENT/GAMES

★ **Abracadata, Ltd. ... 30 day MBG**
12083 Design Your Own Railroad 39.95
Architect., Interiors or Landscape *ea.* 49.95
15914 Train Engineer 28.95
★ **Berkeley Systems ... 30 day MBG**
5737 After Dark 2.0x *(30+ screens!)* ..... 29.
2198 More After Dark 25. 2196 Bundle 39.95
1502 The Disney Collection Screen Saver 29.
3392 Star Trek 29. 14842 Marvel Comics 19.95
5179 Star Trek Screen Posters 19.95
5262 ST Screen Saver/Posters Bundle..... 39.
Bit Jugglers, Inc.
14676 UnderWare 29.95
Broderbund
13601 The Treehouse ..... 36.
★ **Davidson & Associates ... 30 day MBG**
2574 MathBlast. Plus or 1076 Zoo Keep. *ea.* 34.
14848 Cruncher ..... 34.
★ **Delta Tao ... 30 day MBG**
13714 Eric's Ultimate Solitaire 36.95
★ **Edmark Corporation ... 30 day MBG**
7155 Kid Desk 24. 7318 Millie's Math Hse. 29.
1078 Bailey's Book House..... 29.
12989 Thinkin' Things ..... 39.
Electronic Arts
1907 PGA Golf 38.95 2805 Tour. Course 18.95
GameTek
13813 Jeopardy or 7433 Wheel of Fortune 24.95
★ **Great Wave ... 30 day MBG**
6693 KidsMath..... 27.95
2276 Kid's Time Deluxe 27.95
★ **Inline Software ... 30 day MBG**
11188 Pax Imperia..... 36.95
9792 Deliverance or 9797 Firefall Arcade 29.95
★ **Leister Productions ... 30 day MBG**
7126 Reunion 3.0 ..... $115.
★ **Maxis ... 30 day MBG**
13818 SimCity 2000 39.95 5279 Classic 24.95
★ **MECC ... 30 day MBG**
3959 Word Munch 19. 3963 Oregon Trail 29.
★ **Microsoft ... 30 day MBG**
2868 Flight Simulator 4.0 *(CP)* ..... 42.
14214 Creative Writer 42.95
Nordic Software
7723 Lang. Explorer or 7767 ClockShop *ea.* 29.
8260 Word Quest or 7470 Jungle Quest *ea.* 30.
Software Toolworks
15815 Miracle Piano Software 84.95
★ **StarPlay Productions ... 30 day MBG**
3675 Crystal Caliburn 33.95
Upstill Software
14140 Mangia! *(includes 30 recipes)*..... 33.95
Voudette
4764 FLOWERscape *(garden planner)* ..... 48.

CD-ROM

Broderbund
Tortoise & Hare or New Kid on Block *ea.* 34.
13509 MYST *(CP)* 49.95
★ **Claris Clear Choice ... 30 day MBG**
13907 From Alice To Ocean *(book w/CD)* 46.95
Compton's
2314 Interactive Encyclopedia 79.95
FWB, Inc.
10198 CD ToolKit ..... 49.
Lucas Arts
2316 Rebel Assault 59.95
★ **Microsoft ... 30 day MBG**
1741 Musical Instruments on CD-ROM 54.95
14913 Art Gallery or 14914 Dinosaurs *ea.* 54.95
PhotoDisc, Inc.
Full line of great CD-ROM images..... call
★ **Presto Studios ... 30 day MBG**
11330 The Journeyman Project 44.95
Software Toolworks
12968 The Animals! 54.95
★ **Spectrum Holobyte ... 30 day MBG**
1485 Iron Helix 59.95
Time Warner
7454 Hell Cab 1.0 ..... 64.95

MULTIMEDIA/VIDEO

Apple Computer
3561 QuickTake 100 Camera 689.95



BERKELEY SYSTEMS

Delight in the magic of Disney with all your favorite Disney characters in *The Disney Collection Screen Saver. After Dark* is the classic screen saver, with more than 30 displays with sound. **$29.**

1502 *Disney Collection Screen Saver*
5737 *After Dark* ..... 29.



Abracadata

15914 *Train Engineer*—Simulate the experience of controlling a locomotive! Select a pre-designed railroad layout, or create your own. Then drive trains through it and enjoy a locomotive cab view! **$28.95**



Apple Computer

3561 *QuickTake 100 Digital Camera*—The fast, affordable way to add photos to your documents! Take up to 32 digitized color pictures you can download to your Mac's hard drive. Compact, light, and easy to use. **$689.95**



Noise Cancellation Tech.

4919 *NoiseBuster*—Enhance audio clarity of your multimedia system. The NoiseBuster electronically reduces low frequency background noise while leaving desired sounds audible. Also great for air travel! **$119.95**

OUR POLICY

- VISA, MASTERCARD, AMEX. No surcharge.
- Your credit card is not charged until we ship.
- If we must ship a partial order, we pay freight on shipment(s) that complete the order (in U.S.).
- No sales tax, except OH (please add applicable tax).
- All U.S. shipments insured; no additional charge.
- APO/FPO orders shipped First Class Mail.
- International orders: Add 2% surcharge and $2.30 insurance. Manufacturer support and upgrade eligibility may be limited outside the U.S.A. Some products not available for export, call or fax for information.
- COD maximum $1000. Cash or certified check. COD orders require an additional $4.50 charge, ship via UPS and may require addt'l UPS charges.
- 120 day limited warranty on all products. Defective software replaced immediately. Defective hardware repaired or replaced at our discretion. All items subject to availability. Prices and promotions subject to change without notice.
- We are not responsible for typographical errors.

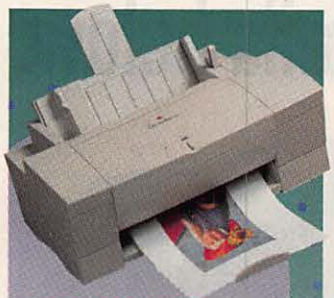
SHIPPING

Continental U.S.: Total shipping charge on any order is $3. Barring events beyond our control, all credit card orders (no CODs) phoned in weekdays by 3:15 a.m. ET will ship Airborne Express for delivery the next business day. That's *same day* delivery for orders placed between midnight and 3:15 a.m.! (Some orders ship UPS Ground for next day delivery). Saturday delivery available to many areas upon request at no additional charge. Order all day Saturday thru noon Sunday for Monday delivery. Some areas required an extra day delivery.

Hawaii, Alaska, Canada, Puerto Rico & U.S. Virgin Islands: Shipping may req. additional time/charges.

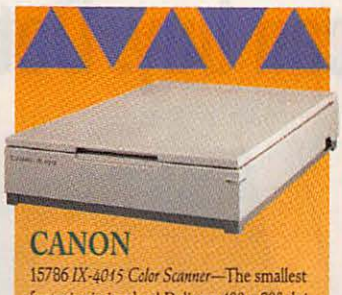
All other areas: Please call 603-446-3333 or FAX 603-446-7791 for information. Business offices: 603-446-7711 M-F 9 a.m. to 5:30 p.m. ET.

From MacConnection.



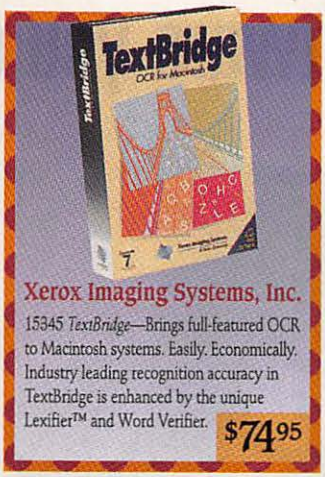
Apple Computer

3479 *Color StyleWriter Pro*—Affordable full color printing! Inkjet printer delivers crisp 360 dpi output; 2 ppm in monochrome, .5 ppm in color. Separate ink cartridges allow economical replacement. **$599.95**



CANON

15786 *IX-4015 Color Scanner*—The smallest footprint in its class! Delivers 400 x 800 dpi in 24-bit color and 400 x 1200 dpi gray scale. Comes with OFOTO scanning software. **$999.95**



Xerox Imaging Systems, Inc.

15345 *TextBridge*—Brings full-featured OCR to Macintosh systems. Easily. Economically. Industry leading recognition accuracy in TextBridge is enhanced by the unique Lexifier™ and Word Verifier. **$74.95**



Texas Instruments

$60 rebate on BOTH through June!

30 DAY MBG

13658 *TI microLaser Pro 600 PS23*—Photo-quality, 600 dpi with 8ppm RISC power. 500-sheet capacity, 6MB, Adobe PostScript level 2 w/23 fonts, PCL5, Mac/PC ready. **$1399.**

13659 *microLaser Pro 600 PS65*..... **1599.**



CommForce

15862 *4-Sight*—A simple but powerful faxing solution for up to 10 networked Macs. Schedule automatic faxing, transmit multiple documents to multiple locations, and more. Includes Zoom VFX FaxModem. **$599.95**



Mobius Technologies

15189 *Speedster 040 Accelerator 33MHz w/o FPU*—Plug-in Quadra performance for your current Mac. An instant speed boost of up to 700%! You also get a FREE 128K Cache for even faster acceleration! Supports Mac II, IIx, IIcx, IIsi, and IIci *(IIx, IIcx, IIsi require an adapter)*. **$579.95**

15191 *33MHz w/FPU*..... **779.95**

15190 *40MHz w/FPU*..... **1149.**

Coda Music Technology
5604 Finale 3.0 $549. 12307 F. Allegro $259.
★ **Great Wave ... 30 day MBG**
1014 ConcertWare Pro 1.0..... 129.95
Macromedia
7651 Action! *(presentations)*..... 219.95
5087 Director 4.0..... 849.95
Noise Cancellation Technologies
4919 Noise Buster..... 119.95
Nova Development
11101 Kaboom! 29. 12278 w/More Kaboom 40.
Radius
1738 PrecisionColor Pivot *(req. interface)* 879.95
14597 PhotoBooster..... 799.95
RasterOps PaintBoard Series
14750 Lightning 24-bit Display Card 849.95
12909 Turbo XL 24-bit Display Card..... 1199.
Sony Multiscan Trinitron Monitors
10529 CPD-1730 17"..... 1039.
★ **SuperMac/E-Machines ... 30 day MBG**
12704 20"+Color..... 1849.
10321 Color Page T16II ..... 1299.
10322 Presenter..... 449.95
8005 Ultura LX 1199. 7985 EtherDock 649.

NETWORKS/COMMUNICATIONS

Apple Computer
7073 Mac PC Exchange..... $59.
10453 AppleShare 4.0 1469. 14576 Upgd. 539.
7101 AppleTalk Remote Access 1.0..... 149.
14231 Remote Access 2.0 Client for Mac 54.95
Asanté Technologies, Inc.
Asanté Lite Ethernet Cards..... call
3569 NetExtender..... 179.
2775 10/T Hub-8 249. 2772 10/T Hub-12 499.
BOCA Research
11052 M144I V.32bis FaxModem..... 159.95
CommForce
15862 4-Sight..... 599.95
★ **CompuServe ... 60 day MBG**
1676 Membership Kit..... 25.
1673 Navigator 3.2..... 49.
★ **DataViz ... 60 day MBG**
1823 MacLink Plus/PC Connect 7.5..... 129.
12613 MacLink Plus/Easy Open Translators 69.
12093 MacLink Plus/Translators Pro 7.5..... 95.
★ **Dayna ... 60 day MBG**
11878 DOS Mounter Plus..... 54.95
8719 EtherPr. or 9888 *(10BASE-T)* *ea.* $339.95
Daynaport Easy Net..... *ea.* 59.
★ **Delrina Technology ... 60 day MBG**
10080 FaxPRO for Macintosh 1.5..... 79.95
★ **Farallon Computing ... 30 day MBG**
11696 Etherthin Mac/PB..... 309.
11499 EtherWave AAUI Transceiver..... 109.
4869 PhoneNET Connector 10-Pk *(DIN8)* 195.
14545 Timbuktu Pro 135. 4866 Remote 129.
9516 PowerPath 105. 9518 LocalPath 139.
6922 Replica/Mac 69.95 7407 *(10 user)* 499.95
★ **Freesoft ... 30 day MBG**
6115 White Knight 11..... 85.
14804 Second Sight..... 119.95
★ **Global Village ... 30 day MBG**
7889 TelePort/Bronze II 95. 2179 Gold 299.
Hayes
10822 ACCURA 2400 74.95 11422 96 Fax 159.95
11419 ACCURA 144+Fax144..... 169.95
2300 Smartcom II 84.95 5971 OPTIMA 24 119.
Insignia Solutions
7557 AccessPC 3.0..... 85.
4089 SoftPC... 109. 10554 SoftPC Pro... 215.
4433 Soft Windows for Power Mac..... 289.
★ **Practical Peripherals ... 30 day MBG**
8063 PM14400FX FaxModem..... 429.95
11045 PM14400FXMT FaxModem..... 199.95
★ **Shiva ... 30 day MBG**
6555 LanRover/L..... 599.
14837 NetModem/E..... *ea.* 1479.
★ **Software Ventures ... 30 day MBG**
1964 MicroPhone II 109. 3455 Pro 139.95
Sonic Systems
Ethernet Adapters *(various)*..... call
★ **STF Technologies ... 30 day MBG**
7639 FaxSTF 3.0..... 39.95
SupraFAXModems
11223 V.32bis 14400..... 234.95
5337 14400LC..... 164.95
★ **Synergy ... 30 day MBG**
6618 VersaTerm 5.0 119.95 6619 PRO 169.95
U.S. Robotics
11842 Sportster 14.4 Mac & Fax..... 179.95
★ **Zoom FaxModems ... 30 day MBG**
7757 AFX... 69.95 15895 VFX 28.8... 239.95
3553 FaxModem VFX V.32bis..... 164.95
14152 FaxModem VFX 14.4V for Mac..... 174.95

UPGRADES & DRIVES

Apple Computer
3443 Power Macintosh Upgrade Card 649.95
★ **DayStar Digital ... 30 day MBG**
15782 Turbo 040 40MHz & 128K Cache 1049.
6388 QUAD 040 w/128 Cache..... 1049.
15925 66MHz Pow. Pro 601 for Power Mac 1599.
15924 80MHz Pow. Pro 601 for Power Mac 2149.
FWB, Inc.
14321 PE 170 409.95 14322 PE 340 FMF 579.95
14318 PocketHammer1000FMF..... 1349.95
IOMEGA
6499 90MB Transp. *(reqs. interface)* 479.95
8781 Mac Transportable 90 PRO..... 369.
10499 Transportable MultiDisk 150..... 479.
★ **MDS Drives - see feature showcase ads**
Mobius Speedster 040 Accelerators
15189 AC433i 33MHz w/128K Cache $579.95
15191 AC433f 33MHz FPU w/128K Cache 779.95
15190 AC440f 40MHz FPU w/128K Cache 1149.
Peripheral Land (PLI) full line available
11470 Infinity 88/RW 44..... 549.

INPUT/OUTPUT

★ **Adesso ... 1 year MBG**
15456 Extended Mac Keyboard..... 79.95
15457 ADB Mouse..... 39.95
Advanced Gravis
1482 Game Pad 39. 9963 MouseStick II 69.
Apple Computer
3567 One Scanner *(grayscale)*..... 739.95
3559 One Scanner *(color)*..... 979.95
3560 LaserWriter Select 360..... 1499.95
3475 Personal LaserWriter 320..... 899.95
3461 StyleWriter II..... 289.95
3479 Color SyleWriter Pro..... 599.95
Caere
4930 OmniPage Pro 5.0 489. 7705 Direct 89.95
7925 OmniScan..... 299.95
Canon
15786 IX-4015 Color Scanner..... 999.95
CoStar
1885 Stingray ADB..... 63.95
Epson
8194 Action Scanner *(ES-600C SCSI)* 869.95
8219 ES-800C Pro Mac..... 1349.95
★ **GDT Softworks ... 30 day MBG**
2499 PowerPrint 99.95 12717 PP. NW 329.95
Hewlett-Packard
14689 ScanJet 2CX..... 999.95
15859 DeskWriter 520..... 289.95
Interex Computer Products
12862 105 Key Deluxe Keyboard..... 99.
★ **Kensington ... 30 day MBG**
2547 Turbo Mouse 4.0 ADB..... 107.
Key Tronics
6974 Mac Pro+Keybd 135. 1070 TrakPro 219.
★ **Microtek Labs, Inc. ... 30 day MBG**
13815 ScanMaker IIG 479.95 13814 IISP 749.95
1688 ScanMaker III 2359.95 1693 IIHR 1029.95
★ **Mouse Systems ... 30 day MBG**
7520 Little Mouse ADB 59.95 8001 Plus 29.95
★ **Soph. Circuits ... 30 day MBG**
8009 PowerKey 75.95 8008 Remote... 32.95
★ **TI microLaser Pro 600 ... 30 day MBG**
13658 PS23..... 1399. 13659 PS65..... 1599.
UMAX Scanners
13748 UC630 689.95 13751 UC1260 1149.95
Xerox
15345 TextBridge *(high-level OCR)*..... 74.95

ACCESSORIES

Apple Computer
11663 StyleWrit. II Cart. 23. 11669 *(3 pk.)* 63.
LaserWriter Toners: Pers. 65. LW II 85.
★ **Disks/Carts.: BASF, Fuji, 3M, Sony, Kao**
★ **Targus Cases... 60 day MBG**
7369 Notepac..... 35.95
13941 Business Commuter Case..... 114.95

MacConnection®

800-800-3333

794MW

MEMBER DIRECT MARKETING ASSOCIATION

14 Mill Street, Marlow, NH 03456

SALES 603-446-3333 **FAX** 603-446-7791

© Copyright 1994 PC Connection, Inc. MacConnection is a division and registered trademark of PC Connection, Inc., Marlow, NH. MacTV is a trademark of PC Connection, Inc.

New Delrina Fax PRO for Macintosh is the best fax software you can buy. Details below.



Their details.

Actual fax output typical of a fax machine or other fax software.

Our details.

Actual fax output from Delrina Fax PRO for Macintosh.

Tired of fax machines and fax software sending images like the one on the left?

Well, now you can get the phenomenal image quality shown on the fax on the right (actual unretouched image) every time — with new Delrina Fax PRO™ for Macintosh. With Delrina Fax, you can now send the sharpest, best defined images of any fax software, regardless of monitor resolution. And with Delrina Fax you can even view gray-scale faxes on-screen.

Sending with Delrina Fax is as easy as printing a document from your favorite application. And since it works in the background you can send and receive faxes without leaving the application you're in. It also lets you easily track and manage your faxes, customize your own cover sheets, and use OCR to quickly convert faxes with text into documents that are ready for editing with your word processor.



Plus, Delrina Fax supports all fax modems, even the PowerBook Express Modem and the AV GeoPort Telecom Adapter. And unlike other fax software, you gain the reliability provided by Delrina's Communications Toolbox fax drivers. So as you update your system software or hardware, Delrina Fax keeps on working. And it's made by Delrina, the makers of the best-selling fax software in the world, WinFax PRO™.

For even more exquisite details, or to order Delrina Fax PRO, call us today.

DELRINA®

1-800-268-6082

Delrina Fax PRO, WinFax PRO and Delrina are trademarks of Delrina (Canada) Corporation. Macintosh is a registered trademark of Apple Computer. All other product names are trademarks of their respective owners. ©1994 Delrina (Canada) Corporation. All rights reserved.

Circle 137 on reader service card

Pointillist

Stereogram Software

PROS: Inexpensive; fun to use; will amaze your friends. **CONS:** Enthusiastic viewing of stereograms can give you headaches.
COMPANY: Pictor GraFX (310/865-0495).
LIST PRICE: $39.95.

MW ★★★

IF YOU'VE ALWAYS LOVED OPTICAL ILlusions, or snuck away to distant theaters and anonymously slipped on blue and red glasses to watch 3-D movies, Pointillist is the program for you. And even if you haven't had a lifelong yearning to fool your brain into seeing things that aren't there, Pointillist is a gleefully wacky program in these days of megamergers and serious computing.

What Pointillist does is make stereograms. Stereograms are images that look, at first glance, like random dots, but as you focus on a plane *beyond* the focal point of the page or screen, a 3-D image emerges from the pattern and appears to hover inches in front of the background.

The Official Secret Decoder Book, known in more stodgy products simply as the manual, describes four reliable ways to learn how to see the 3-D images. All of them are ways to help you get your eyes to focus beyond the image. If you can imagine staring at the horizon while also looking at a piece of paper a few inches in front of your face, you've got the basic idea. Once you can see the images emerge from the background, you can blink or move farther away to find a comfortable viewing distance. But don't change your focus, or you'll lose the 3-D effect and simply see a dot pattern again.

Pointillist comes in four different modules. GraFX Viewer 1.0.2 lets you open and view stereograms. SuperDots 1.0.2 enables you to create your own stereograms from PICT files. GraFX Stereograms and GraFXgrams are screen savers that work with Berkeley Systems' After Dark to project stereograms and stereogram animation on your monitor.

To make your own stereogram, you first create an 8-bit PICT image in a paint program. Then you open SuperDots and choose Create Stereogram. The pattern-selection dialog box opens with four choices of dot patterns (black-and-white, gray-scale, or color-random dots, or a custom PICT pattern of your own design). You then open up the picture that you want to make into a stereogram, and the program goes to work.

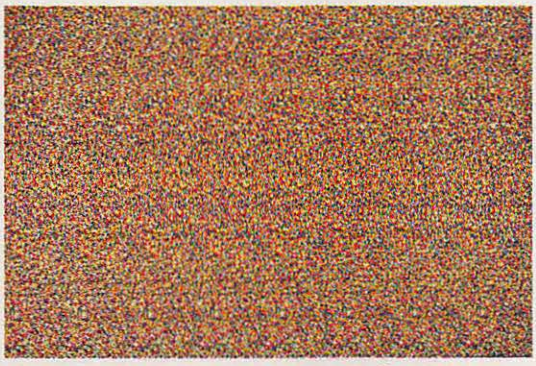
SuperDots converts your PICT image into a gray-scale image (if it was originally a color image), then creates an illusion of depth based on the darkness of each area in the picture. The darker the gray, the farther away it appears; the lighter the gray, the closer the image appears. Once the stereogram is completed, you can add color overlays and borders to dress them up.

Provided you have After Dark 2.0, GraFX Stereograms and GraFXgrams work like other After Dark add-on screen savers, showing a cycling display of your stereograms or stereogram animation on your screen. The program ships with 40 stereograms and 3 animated sequences, so you have plenty to look at even before you start adding your own designs.

Pictor GraFX promises that a more elaborate product called HoloVision will be available in the near future for those budding stereogram artists who want more control over the creation and design of their 3-D work. For now, SuperDots and any paint program provide enough of the basics to whet the appetite of all but the most one-dimensional.—LIZA WEIMAN



Before The base 3-D image here is a gray-scale image created in a paint program. The colored dots at the top represent the portion that SuperDots has already converted into a stereogram image.



After If you hold this image close to your face, then move it slowly away from you without changing your focus, the image of the crane should appear to be hovering above the background.

MacMoney 4.01

Personal-Finance Software

PROS: Easy to learn and use; good graphing and reporting features. **CONS:** Lacks investment-tracking and tax-reporting features found in competing programs. **COMPANY:** Survivor Software (310/410-9527). **LIST PRICE:** $89.95.

MW ★★★

GOOD FINANCIAL SOFTWARE SHOULD be flexible enough to easily handle most of your financial-accounting needs. MacMoney 4.01 has new and improved features that will please its longtime users, but the program hasn't kept up with the leaders in the field and probably won't win many converts.

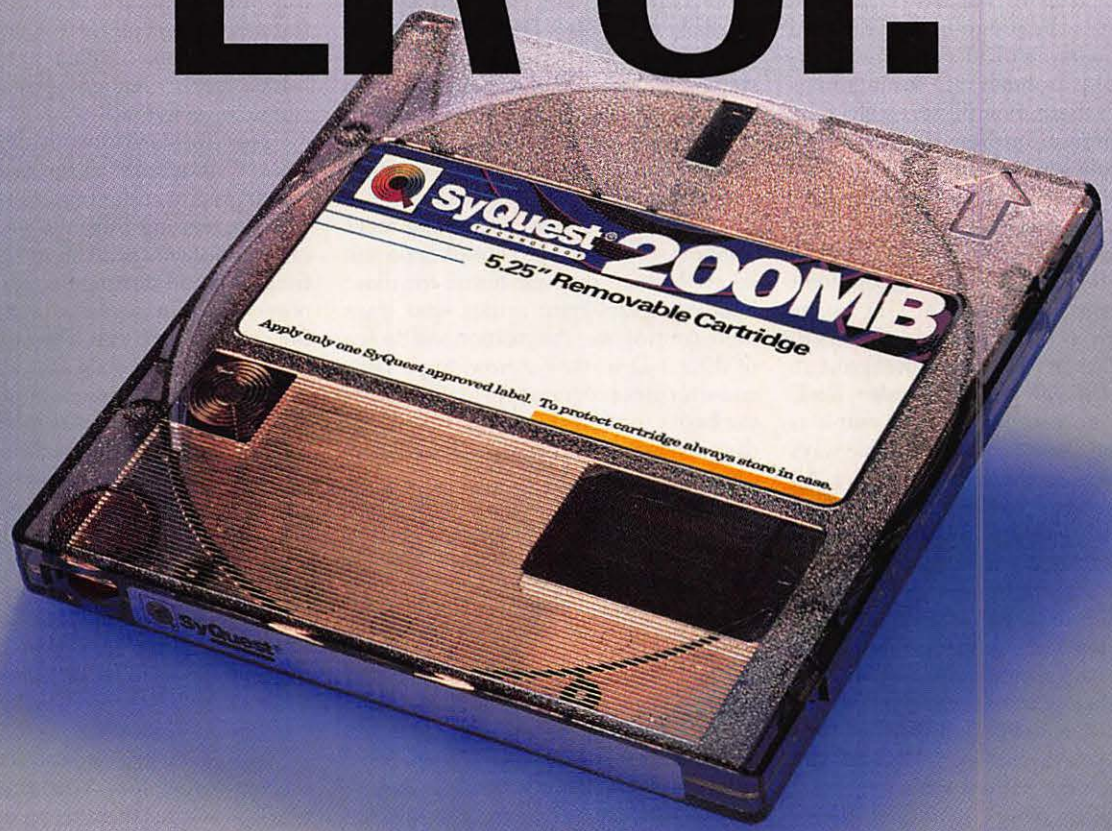
New to MacMoney is the ability to use a "13th month" at the end of a year, which gives you the time to receive and pay outstanding bills and gather other information you need before closing one fiscal year and starting the next. You can now create subcategories for transactions; for example, you can have a main category called Automobile and subcategories called Service, Insurance, and Fuel; and you can rearrange the categories and subcategories. Many of MacMoney 4.01's improvements are extensions of the previous version's features. You can now have up to 25 destination categories for a split transaction; handle as many as 30,000 records per year; use longer payee names; have up to 1000 categories, Names, and ID Codes (which allow you to group transactions for later reporting); and switch between report, graph, and transaction windows.

Automatic-transaction capabilities are improved, too. You can now edit transactions, set them to occur biweekly instead of just monthly, and set them up in accounts other than bank accounts. MacMoney can now import data from Intuit's Quicken, the CheckFree electronic-payment service, and Aatrix Payroll; but it can't transmit data to CheckFree directly, as can Quicken and MECA's Managing Your Money (MYM).

Maintaining control of your finances requires that you get useful information from your financial program, and MacMoney offers a good selection of customizable reports. The new version adds a few default reports and lets you open more than one report at a time. MacMoney's financial graphs are especially impressive: you can choose from canned graphs, or create customized pie, line, and

continues

FILL 'ER UP.



Introducing The New SQ5200C Drive. The Biggest Reason Yet To Join Our 5.25" Family.

The SQ5200C delivers big in data-intensive applications such as desktop publishing and multimedia, with 200MB of storage, hard drive performance, and full read/write compatibility with all SyQuest 44MB and 88MB cartridges. Plus all the advantages of removability, like unlimited capacity, off-line storage, system sharing, fast backup, and unbeatable data security and transportability.

FEATURING SyQuest REMOVABLE TECHNOLOGY

Look for this logo when buying removable storage products.



Sales of more than 6 million cartridges and 1 million drives have made SyQuest the world standard in removable storage.

If you're a SyQuest user, it's the best way to migrate to the next level of storage. If you're looking to SyQuest for the first time, it's the biggest reason yet to join the world standard. To find out how to get more mileage out of your demanding applications, call 1-800-245-2278.

SyQuest® TECHNOLOGY

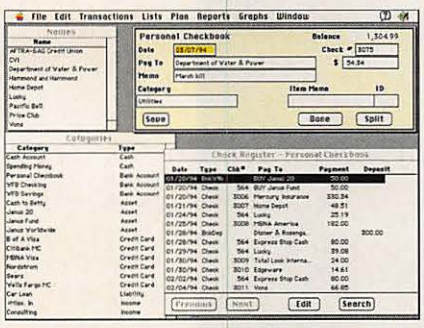
The World Standard.

1-800-245-2278. SyQuest Technology, Inc., 47071 Bayside Parkway, Fremont, CA 94538. SyQuest and the SyQuest logo are registered trademarks of SyQuest Technology, Inc. © 1994 SyQuest Technology.

Circle 249 on reader service card

bar charts. You can also save customized reports and graphs for repeated use.

The problem with MacMoney isn't so much what the program includes; it's the features that it lacks and that are available from the competition. Unlike Quicken or MYM, MacMoney can't track stocks, bonds, or mutual funds. You can work around this by using asset accounts and calculating your portfolio value fluctuations manually, but the process is inconvenient. Taxes are another weak point for MacMoney. For example, MYM has extensive tax-estimation abilities that enable you to assign categories to specific lines on IRS tax forms; Quicken is almost as good as MYM in this area, and it also handles loans better than MacMoney does. Survivor Software needs to add these features to MacMoney to stay competitive. I'd also like to see the program get a face-lift—it is easy to use, but its user interface looks outdated (see



Like Paper, but Smarter MacMoney's unadorned interface makes for easy data entry. You fill out forms that look like their paper counterparts, so it's hard to make a mistake.

"Like Paper, but Smarter"). By default, reports even use outlined and shadowed text, which looked cool in 1985 but is passé nine years later.

The MacMoney version I reviewed had a few minor bugs, such as incorrect totaling of some categories on a report. A call to Survivor Software revealed that the bugs I'd found had been fixed, and the company sent me an update disk. Technical support, while not toll-free, was friendly, accurate, and free of charge. The company also provides good support via fax and online services.

The personal-finance market is competitive; to keep their place, programs need to constantly evolve, or they risk being left behind. Unfortunately, MacMoney 4.01 has been outdistanced by its rivals. If your finances are fairly uncomplicated, and you want a program that is easy to use, then MacMoney will do the job. But if you need to track even simple investments or estimate your tax liability during the year, look to MYM or Quicken.—TOM NEGRINO

DiskTop 4.5

File-Management Utility

PROS: Customizable views; pop-up menus for direct access to frequently opened folders; good file-launching module. **CONS:** Accompanying text-search software incompatible with 68040-based Macs. **COMPANY:** PrairieSoft (515/225-3720). **LIST PRICE:** $99.95.

MW ★★★★

DISKTOP IS A SIMPLE BUT POWERful file-management utility that lets you copy, move, rename, delete, and find files—without using the Finder. Furthermore, when you need to organize large numbers of files on different volumes, DiskTop handles virtually all of these tasks more quickly and effectively than the Finder does.

Longtime DiskTop users know how handy this unassuming desk accessory can be. With the release of version 4.5, DiskTop is even more powerful, and its revamped interface design gives it a polish it lacked before.

You access DiskTop from the Apple menu or by using the built-in hot-key combination ⌘-shift-D. The lower half of the program's main screen contains a window that displays a directory of each disk connected to your Mac (similar to a list view in the Finder). The top half of the DiskTop screen contains a set of 3-D–style buttons you click on to perform various file-management tasks.

You can now fully customize the interface with ten different custom list views, each containing only the file information you want to display. You can rearrange the order of columns by dragging them, and you can make the columns as wide or narrow as you want.

A number of improved features speed up most jobs. For example, there are keyboard shortcuts for all the major file-management tasks. When you press the ⌘ key, DiskTop displays the shortcuts right on the main interface buttons, so it's easy to learn the shortcuts.

The improved interface makes navigating your folders easier, too. By adding the names of frequently accessed folders to the main Drive pop-up menu, you can jump straight to the listed folders.

DiskTop's search functions outperform the Finder's Find command. You can simultaneously search for files by any combination of name, creation date, modification date, type, creator, and size. (The Finder handles only one kind of search at a time.) Once you find the files you want, you can retain the results of the search and add to the current found set with subsequent searches.

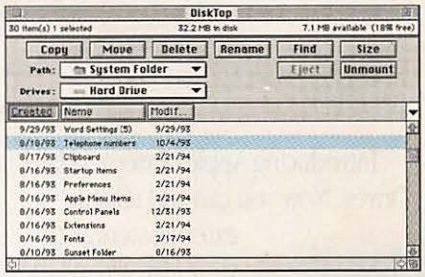
DiskTop is also great for handling System 7 aliases; the program lets you create and move aliases with a single command, saving you the trouble of first creating an alias and then dragging it into the desired location.

Of course, the program also enables you to do some things you can't do with the Finder at all—like making folders and files completely invisible, or editing the four-letter type and creator codes the Macintosh uses to identify files. (You occasionally need to do this to repair a damaged file.)

The new version also makes it easier to export file information to other applications. File lists that are displayed by DiskTop can now be exported as tab-delimited text files.

PrairieSoft is shipping DiskTop with two add-on modules. DiskLaunch is a utility that allows you to bypass the Finder to launch applications and open files. From anywhere on screen, you can access a pop-up menu listing your most frequently used applications and documents. Just select the ones you want from the menu, and DiskLaunch opens them.

The other module, Gofer, is a text-search-and-retrieval utility program from Microlytics that allows you to search for strings of text within documents. There are two disappointments, though: Gofer provides no printed manual—just a lengthy documentation file on one of the installation disks. And more important, the version of Gofer that ships with Disk-

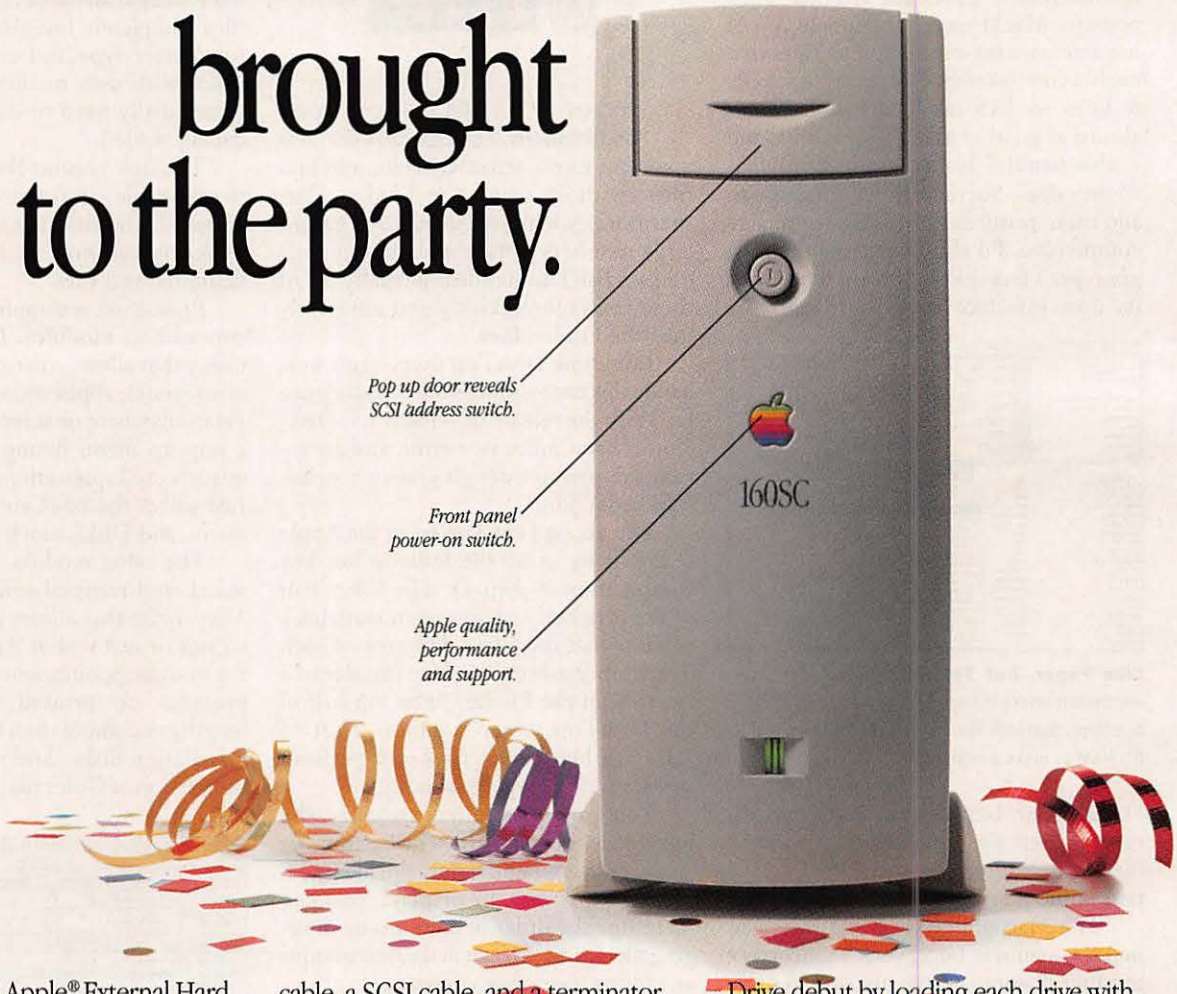


DiskTop's New Look The new version of DiskTop sports an improved interface with 3-D buttons and customizable list views. The custom view shown here, for example, contains only the file names along with their creation and modification dates.

Top, 2.0, is incompatible with all 68040-based Macs. You have to send in a coupon to get the free 040 upgrade, which was still being beta-tested when this review was written.

But even without DiskLaunch and Gofer, DiskTop is a valuable package that makes organizing a crammed hard drive a more manageable task.—JOSEPH SCHORR

Before you consider a third party external drive, look at what we've brought to the party.



Introducing Apple® External Hard Drives. Now you can add reliable external storage to your Mac with all the quality you expect from Apple, at prices that will surprise you.



Apple External Hard Drives are bundled with everything you need to begin safely storing your data right away, including a power cable, a SCSI cable, and a terminator. Convenient front-panel SCSI ID and power controls make it easy to power up and change your SCSI address – whether you set the drive up vertically or horizontally.

The new Apple drives are available in four convenient storage capacities, 160Mb, 230Mb, 500Mb and 1000Mb, and are manufactured exclusively by La Cie, Ltd. a Quantum Company. And right now we're celebrating the Apple Drive debut by loading each drive with powerful hard disk management software, handy utilities and much more.

Look for the Apple Drive at your local dealer soon. For more information and the name of a participating reseller or Quantum distributor, call La Cie.

Now you can safely store your work outside your Mac without leaving the Apple family.

That's cause for celebration. Apple

For All The Facts Call: LACIE LIMITED A QUANTUM COMPANY 800-999-0499

© 1994 La Cie, Limited. All rights reserved. Apple, the Apple logo, and Macintosh are registered trademarks of Apple Computer, Inc., registered in the United States and other countries used under license therefrom.

Circle 51 on reader service card

TurboDialer

Automatic Telephone Dialer

PROS: Dials numbers from your Mac; works with multiline phones; cheap. **CONS:** Sounds seep into phone conversations; not compatible with some PBX systems. **COMPANY:** Advanced Software (408/733-0745). **LIST PRICE:** $79.95.

MW ★★★★



TOM GIBSON

MY FINGERS USED TO GET NUMB from dialing phone numbers all day. But sensation has returned since I started using the TurboDialer. This automatic telephone dialer takes advantage of the Mac's ability to produce the dial tones. It's a box, about the size of a pack of cigarettes, with a speaker on one side.

As far as computer connections go, it's fairly simple. One cord comes out of the TurboDialer and plugs into the Mac's sound-out port. You plug another cord into your phone where your handset normally goes; then you plug your handset into a jack on the TurboDialer. Once you have connected everything, any sound your Mac makes comes out of the speaker on the TurboDialer except touch-tones, which get passed on to the handset.

Because the device plays the touch-tones through your handset, the TurboDialer works only with telephone systems that accept touch-tones. Those include many multiline phone systems, as well as some PBX systems. Certain PBX systems work with the device only after you manually dial the phone for an outside line; others don't work with the TurboDialer at all. If you have any doubts, check whether your phone accepts analog input at the handset.

The TurboDialer ships with its own extension, DirectDial. DirectDial can dial a phone number from any application. All you do is highlight the number and hit a user-definable hot key. You can configure DirectDial to preface a phone number with 9 to get an outside line, if necessary, or to not dial the local area code. In addition to DirectDial, most database, card-file, and contact-management programs can produce dial tones.

This product is not without glitches. The TurboDialer's speaker doesn't sound as good as the Mac's internal speaker. More important: in theory, only touch-tone sounds pass through the TurboDialer to the handset of your phone. Any other sounds the Mac makes merely play on the TurboDialer's speaker. In practice, it's a different story. If you're on the phone when your computer makes a noise, the TurboDialer transmits the noise faintly both to you and to the person with whom you're speaking.

A grounding problem with Centrises creates a hissing noise on the phone as long as the TurboDialer's connected. Advanced Software says this problem is limited to the Centris models. I found the noise irritating enough that I kept the TurboDialer connected to my Mac II at work and not to my Centris at home.

Except for the occasional computer noise that seeped into my phone conversations, I found the TurboDialer to be a well-executed product. If you constantly dial phone numbers that are stored in your computer, I highly recommend it.—PAUL DEVINE

LabView for Mac 3.0.1

Data Acquisition and Analysis

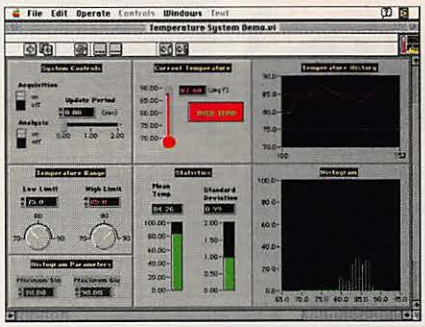
PROS: Complete system for analyzing experimental data; access to giant virtual instrument library. **CONS:** Overkill for simple applications. **COMPANY:** National Instruments (512/338-9119). **LIST PRICE:** $1995.

MW ★★★★

THE SCIENTIFIC-INSTRUMENT BUSINESS underwent a revolution in the 1980s. As fast, inexpensive computers became available, equipment designers realized that you could get a signal converted to digital form and get the digital data into computer memory, where all sorts of processing could be accomplished with software. Instead of real physical special-purpose instruments, "virtual instruments" could take over the instrument market.

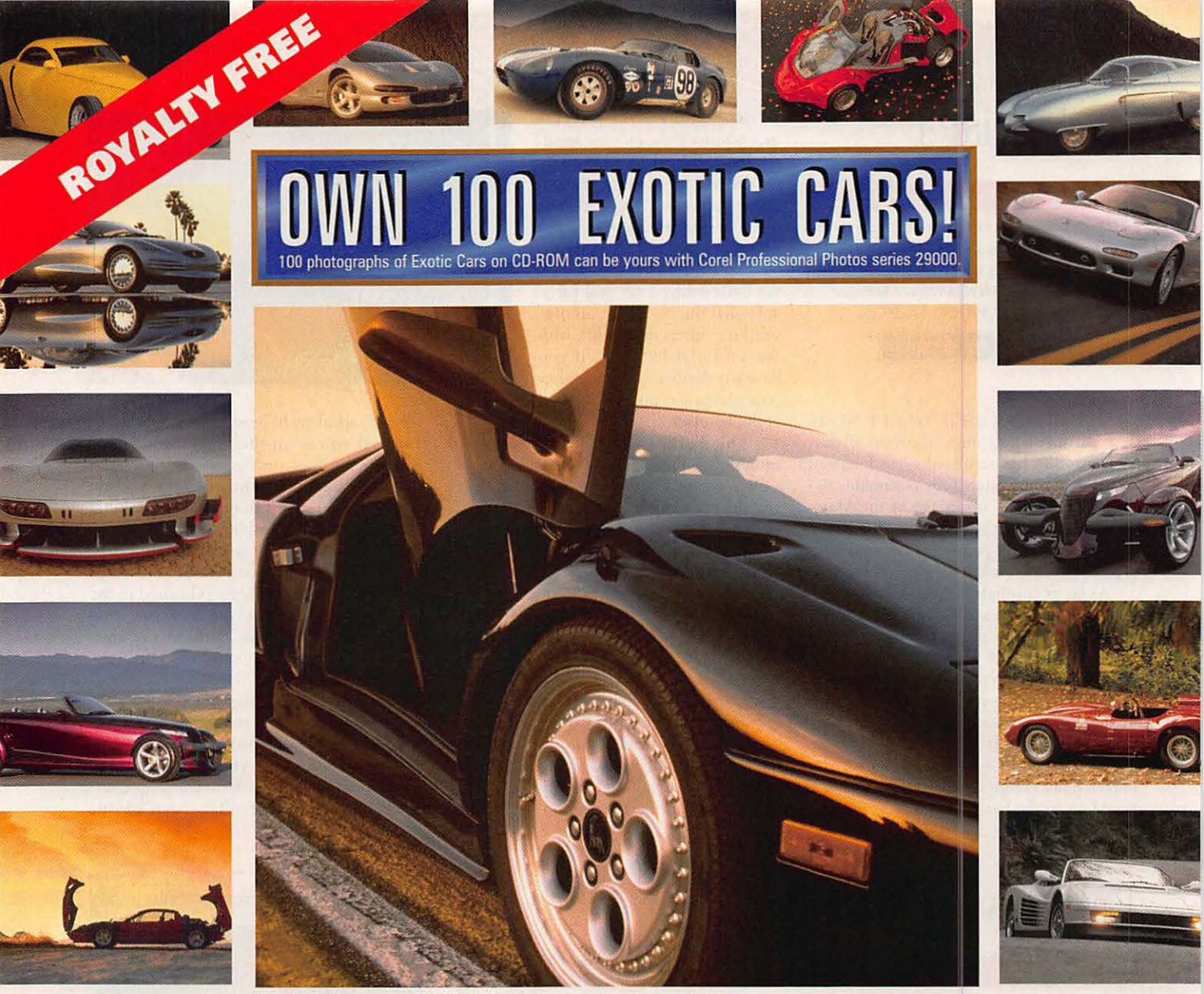
National Instruments has become the leading exponent of this virtual instrument (VI) approach. You can string together a few LabView icons to simulate a traditional scientific measuring system, but National Instruments has anticipated practically every useful system known to modern laboratory practice, and huge libraries of third-party virtual instruments are available. A new batch of signal-analysis Measurement VIs of interest to electrical engineers (power spectrum, amplitude and phase measurement, impulse and transfer response functions) expands the already large built-in VI package, and another VI for automating repetitive testing makes the Measurement VI package more useful on the test bench.

In version 3.0.1, a uniform programming environment across Sun (Unix), PC Windows, and Mac platforms has been established, making VIs from all three groups distributable to the others. This software leverage, combined with the acquisition of HiQ, means that LabView has no real competitors at the high end of the data-acquisition and -analysis market. Several other programming constructs improve the 3.0.1 package: simple usage of global variables, local variables to control instrument-panel elements, and occurrence functions to help manage timing. As in earlier versions, there's provision for integrating LabView code with C language code in the MPW environment, and the software still manages data acquisition for IEEE 488 and VXI bus hardware products. A native-mode PowerPC version should be available by the time you read this.



Switched On You could build this monitoring demo yourself in half an hour, but LabView includes it and dozens of other ready-to-go examples. Version 3.0.1 offers easier programming of front-panel controls and indicators.

LabView 3.0.1 is a different product from the original. And its Texas-based developers may have thought a little too big for some users. Full use of version 3.0.1 requires 12MB of RAM, 24MB of hard disk space, and a math coprocessor. So if your lab has older Macs, especially in some low-velocity activity such as temperature or humidity monitoring, you might find products from Remote Measurements or GW Instruments better suited for the task. But for large-scale, demanding projects in data acquisition and analysis, LabView 3.0.1 is an unchallenged standard, in a class by itself.—CHARLES SEITER



Other categories:

- 1000 - Sunrises and Sunsets
- 2000 - Mountains of America
- 3000 - WW II Planes
- 4000 - Porsche Racing
- 5000 - Coasts
- 6000 - Wild Animals
- 7000 - Sailboats
- 8000 - Birds
- 8100 - Birds II
- 9000 - Trees and Leaves
- 10000 - Air Shows
- 11000 - Patterns
- 12000 - Underwater Reefs
- 13000 - Flowers
- 13100 - Flowers II
- 14000 - The Arctic
- 15000 - China and Tibet
- 16000 - Rural Africa
- 17000 - Ireland
- 18000 - Western Canada
- 19000 - Arizona Desert
- 20000 - Spirit of Buddha
- 21000 - Auto Racing
- 22000 - Bridges
- 23000 - People
- 24000 - Churches
- 25000 - Food
- 26000 - Lakes and Rivers
- 27000 - Waterfalls
- 28000 - Fields
- 30000 - Egypt
- 31000 - Residential Interiors
- 32000 - Deserts
- 34000 - Aviation Photography
- 35000 - Insects
- 35100 - Insects II
- 36000 - New Zealand
- 36100 - New Zealand II
- 37000 - Fighter Jets
- 40000 - Fireworks
- 42000 - Predators
- 43000 - Waterfowl
- 44000 - Alaska
- 45000 - Underwater Life
- 46000 - Hawaii
- 47000 - Turkey
- 47100 - Turkey II
- 48000 - Northern California
- 49000 - Apes
- 50000 - California Parks
- 51000 - Cactus Flowers
- 52000 - Butterflies
- 53000 - Mexico City
- 54000 - New Mexico
- 55000 - Korea
- 56000 - Sacred Places
- 57000 - Old Singapore
- 58000 - Guatemala
- 59000 - Doors of San Francisco
- 60000 - Skiing in Switzerland
- 61000 - Ski Scenes
- 62000 - Windsurfing
- 63000 - Commercial Construction
- 64000 - Mexico

and many more...

COREL PROFESSIONAL PHOTOS CD-ROM

- 100 Royalty Free Images
- Kodak Photo CD Format
- Mac & PC Compatible
- Ideal for Desktop Publishing
- Corel Screen Saver & Utilities

COREL 1-613-728-3733 EXT.106

The World's Leading Photo CD-ROM Collections

from the makers of CorelDRAW, the world's best-selling graphics software.

OVER 160 STUNNING CATEGORIES AVAILABLE!

Great as screen savers or stock photography.
Ideal for ads, brochures, presentations and multimedia.
Use CorelDRAW to retouch or add special effects.

DTP direct DESKTOP PUBLISHING CATALOG $29.00 U.S. funds EACH CATEGORY

1•800•395•7778

SERIOUS GRAPHICS SOFTWARE & HARDWARE

MICROSOFT WINDOWS COMPATIBLE

PC Multimedia PC

Macintosh

Not all utilities are available for Macintosh. All logos and wordmarks, trademarks, registered trademarks and certification marks are the property of their respective companies.



KUR-0043-CARS

100 SUPERB IMAGES IN EACH COLLECTION!

$ ATTENTION $ PROFESSIONAL PHOTOGRAPHERS!

If you are a professional photographer interested in having Corel publish your photographs, please call the number below for more information.

CALL: (613) 728-8200 ext. 5080

Circle 78 on reader service card

Grolier Multimedia Encyclopedia

CD-ROM Encyclopedia

PROS: Encyclopedia text is fully indexed and easy to search and meander; relatively fast access times; multimedia elements embrace a broad spectrum of topics. **CONS:** Some of the animation and video clips are clumsy; a few hierarchy glitches. **COMPANY:** Grolier Electronic Publishing (203/797-3530). **LIST PRICE:** $395.

MW ★★★★

IF YOU BELIEVE, LIKE I DO, THAT ELECtronic search algorithms are second only to plumbing when ranking advances in civilization, you'll find the newest version of the Grolier Multimedia Encyclopedia to be a first-class Boolean treat. The disc indexes the entire text of the 21-volume Grolier Academic American Encyclopedia and arranges the more than 33,000 topics into easy-to-navigate, logical hierarchies. A search on the word *silicon*, for instance, yields a list of 177 topics ranging from cement to semiconductors.

Among the many still images in the Pictures database are examples of tools, animals, political and religious leaders, architecture, and astronomy. Audio selections include animal and bird sounds, highlights from historic speeches and musical scores, and samplings of musical instruments from accordion to zither. (The encyclopedia requires at least an 8-bit color system, 1.5MB of free RAM, 3MB of hard disk space, and a QuickTime-capable CD-ROM drive.)

More than 50 video clips offer short takes on topics as diverse as Venus flytraps and the first moon landing. Given the size and resolution constraints of QuickTime movies, many of the videos are murky and difficult to make out. But some, like the footage of the *Hindenburg* disaster, are spectacular.

The 15 Multimedia Maps and the 13 Knowledge Explorer multimedia essays offer brief glimpses of broad topics—the Civil War, women's suffrage, the workings of the human body. The Painting and Sculpture essay, for instance, rapidly presents images ranging from cave paintings through Nam June Paik's video sculptures.

The disc offers an intriguing window onto the kinds of interactive reference materials we can anticipate. However, I couldn't help wishing that a few of the lesser video clips and animations had been sacrificed to make room for more fulsome text—Dr. King's entire "I Have a Dream" speech rather than the very brief quip describing it, for example.



Search and Enjoy Access to text elements via the alphabetized Title List, robust Word Search, chronological Timeline, and hierarchical Knowledge Tree is straightforward and fairly fast.

Timeliness is another issue. The last bibliographic reference for computer graphics is from 1987; the last for computer memory is from 1985.

Future versions will no doubt clean up some of the hierarchical snafus. When you choose to view art images, for instance, you find two of van Gogh's paintings listed under his name; a third is found under its title, *Chair and Pipe*.

Still, the good points of the Grolier encyclopedia are worth extolling—it has excellent search capabilities, it weighs much less than a shelf full of books, and it's fun. —SUZANNE STEFANAC

Helix Express 2.0.1

Relational-Database Software

PROS: Intrinsically multiuser, client-server design; built-in document management; updates information immediately across a network. **CONS:** Icon programming sometimes awkward. **COMPANY:** Helix Technologies (708/465-0242). **LIST PRICE:** $589.

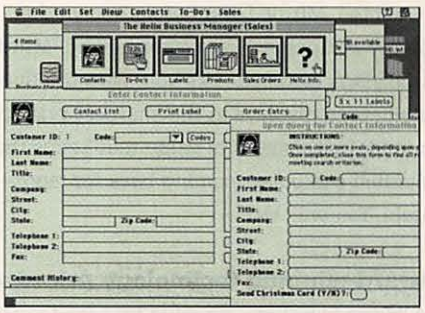
MW ★★★★

HELIX TECHNOLOGIES PIONEERED a unique, icon-based programming technology for relational databases on the first Macs. The program has a devoted following, mainly because a Helix database is easy to modify—and databases always seem to need modifying. Early versions were slow, but version 2.0.1 is much faster. Search speed is about four times quicker in 2.0.1 than in 1.0, and on the new faster Macs it tackles megarecord files with no problems. Although it can't compete with Microsoft's FoxPro/Mac in raw search speed, Helix's performance is no longer objectionable, and multiuser operation is downright snappy.

Helix introduced binary large objects (BLOBs) as data structures a few years ago; a BLOB field in a Helix database can be text, a picture, sound, or any Mac file type. Helix used BLOBs to design a separate document-management system that was folded into Helix Express 1.0. Version 2.0.1 now supports access to externally stored documents. This means that a Helix database can manage access to huge, network-based piles of information while the database itself remains relatively compact. Helix now updates information immediately across a network as soon as a user makes a change (updating access is managed with a detailed password-administration system).

Besides the basic speed improvement, query forms no longer redraw after a query value changes; text fields can now contain keywords as indexed subfields; and a Power query mode lets you formulate record searches in something approximating English, rather than using a query form. Report generation has been improved by an automatic multicolumn, multirow feature that lets you make spreadsheetlike reports, with the equivalent of in-cell scrolling.

Helix Express 2.0.1 custom database development has been simplified in two different ways. Developers can get an unlimited number of run-time versions for $495 (clients in client-server mode can be activated with a call to Helix). And a new book, *Riding The Helix Express*, by Jan Harrington (Helix Technologies, $29.95, 1994), explains how to do real Helix business applications of varying complexity. Although it's easy to set up quick-and-dirty database models in Helix, making optimal use of the tiles and abaci (Helix's programming elements) calls for some guidance. Nonetheless, users who want to upgrade to relational-database capabilities should look at a Helix Express demo. Helix's claim that its database is geared to nonprogrammers is quite valid, and now the program's improved performance makes it a serious competitor with 4D, Omnis, and FoxPro for all-Mac networks.—CHARLES SEITER



Simplicity Helix Express 2.0.1 includes examples of basic business applications that users can modify and extend. Even with no background in programming, tinkering with Helix databases is fairly simple.



Your Best Value Guaranteed

Give Us 30 Days And
You'll Be A Mirror Customer For Life.

In an industry clamoring with companies all claiming to give you the best value in displays, only one company has the confidence to prove it to you with a 30-day "Love It Or Return It" guarantee. Mirror. Long before many other display companies were even formed, Mirror was supplying customers, like you, with the finest-engineered displays at the sharpest price points around. It's this level of value that keeps thousands of satisfied customers coming back for more—time and time again. You will, too!



Award-winning technology priced within reach!

At prices like these, it would be easy to confuse these displays with the lower-end displays on the market. But don't be misled. Mirror's advanced technologies give you quality you must see to believe. And we have a wall full of awards to prove it. Our Full Page Monochrome Display is a Macworld Editors' Choice and has earned a Four Mice Rating from MacUser.



$999 Trinitron
$499 14-inch Color $349

Our Two-Page Display also dazzled MacUser editors and earned a rating of Four-And-A-Half Mice.

Our 17" Trinitron sailed to a MacUser Four Mice Rating, also.

Compare... Mirror costs up to 30% less!

Take a look at Mirror's hot specs and sizzling low prices. Then shop around. Check out how far your money goes with RasterOps,® Phillips,® SuperMac® and Radius.® Feature-for-feature, dollar-for-dollar, you'll find none come close to matching the value of a genuine Mirror display.

Call Now For Your 30-Day Trial!

To start enjoying the finest value in displays, simply pick up the phone and call us. If our displays doesn't meet your expectations, return it within thrity days, and we'll refund your money. No questions asked. Guaranteed.

Toll Free • 24 Hours
1-800 643-4142

Model	Resolution	Refresh	DPI	Price
Full-Page	640x870	75Hz	80	$399
Two-Page Mono	1024x768	78Hz	72	$499
Two-Page Gray	1024x768	75Hz	72	$699
14" Color	640x480	50-90Hz	69	$349
14" Trinitron	640x480	55-90Hz	69	$499
15" Color Portrait	640x870	75Hz	80	$799
17" Trinitron	Variable	66-75Hz	Variable	$999
20" Color	Variable	50-90Hz	Variable	$1399
20" Trinitron	Variable	50-90Hz	Variable	$1999
ProView 21" Color	Variable	60-120Hz	Variable	$2099

MIRROR
The best thing next to your Mac™

Call Now For Information About Other Industry-Leading Mirror Values Including: Scanners, Optical Drives, DAT Drives, CD-ROM Drives, Hard Drives, Graphics Cards And More!

5198 West 76th Street, Edina, MN 55439 USA fax: 612-832-0052 tech support: 800-323-9285

(C) Copyright 1994, MacUSA, Inc. All rights reserved. All trademarks are property of their respective holders. Prices subject to change without notice. *Does not include shipping.

Circle 58 on reader service card

VirtualDisk 1.1a

Disk-Cataloging Software

PROS: Rapid cataloging of removable disks; fast, efficient label printing; excellent disk-copy utility. **CONS:** Label-printing application cannot save files. **COMPANY:** Continuum Software (206/695-8136). **LIST PRICE:** $69.

MW ★★★★

VIRTUALDISK HAS ONE BASIC PURpose, which it fulfills extraordinarily well: it catalogs removable disks, including floppies, SyQuest cartridges, Bernoulli disks, and opticals. The process is practically automatic. As you dismount a disk, VirtualDisk goes into action (indicated by a progress bar on screen). Within a few seconds, the program records the disk's directory and stores it in the VirtualDisk folder.

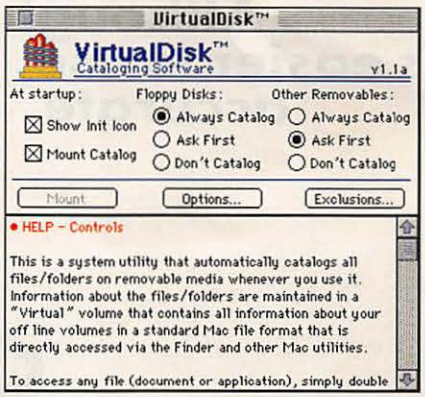
Inside VirtualDisk's colorful desktop folder is the catalog itself, consisting of the icons of all the disks you've added to the catalog. When you double-click on a catalog icon, you see the original disk's directory (although creator information isn't displayed). You can search for the files you want using the Finder's Find feature. When you double-click on any file in the directory, a message asks you to insert the original disk on which the file resides. Once you mount the disk, the file opens normally.

There are a handful of options in the VirtualDisk control panel, such as whether to catalog floppies and/or removables, and whether the program should ask you to OK the cataloging process. An Options button lets you save icons in your catalog and choose whether the icons should be black-and-white or color.

Two additional utilities are packaged with VirtualDisk. The first, EasyLabels, allows you to print a disk's directory in any of several standard Avery label formats. You can customize labels. Alas, you cannot save the label sheets you create—the program's sole, annoying shortcoming.

The second utility is the shareware favorite DiskDup+, which offers full track-by-track copying of your floppies. DiskDup+ also reads and mounts disk images created in Apple's Disk Copy format. The program, which sells for $20, is bundled with VirtualDisk at no extra cost.

By default, a VirtualDisk catalog takes 1MB on your hard drive. The catalog expands as its contents increase (up to 65MB if you ever get close to its 300,000-file limitation). VirtualDisk is almost invisible in actual use, except for the progress bar it displays when it scans a new (or changed) disk. In using VirtualDisk, I encountered none of the quirks I found when reviewing a competing program, Atticus Vista.



Setting Up Your Virtual Disk Click on the Mount Catalog option to begin the disk-cataloging process.

The brief manual clearly describes how to use VirtualDisk and EasyLabels. The VirtualDisk control panel provides online help. When trouble arises, Continuum's customer support is easy to reach (it's a toll call), friendly, and informative.

Judged alone, VirtualDisk is perhaps the best solution to your disk-cataloging woes. When you add EasyLabels and DiskDup+ to the mix, it's an excellent value indeed, and I highly recommend it.
—GENE STEINBERG

Automap Road Atlas for Macintosh 2.01

Mapping Software

PROS: Simple to use; requires only 5MB of hard drive space. **CONS:** Slow screen redraw; does not list every street in North America; only supports cut-and-paste export. **COMPANY:** Automap (206/455-3552). **LIST PRICE:** $99.95.

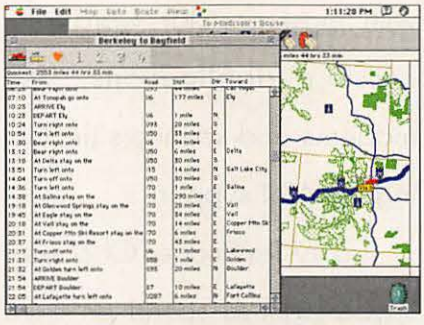
MW ★★★★

BEFORE I HAD AUTOMAP, I SPENT hours planning long road trips. I also spent hours getting lost on those trips. Automap Road Atlas saves me a lot of time and a lot of frustration.

Automap uses a database of freeways, highways, and state and county roads to calculate routes between more than 120,000 North American locations. It's a tool for finding the best routes between cities and towns. Unlike some CD-ROM atlases, Automap's database doesn't include every street on the continent. Automap won't help you find the best route between bookstores in Manhattan, for example. But the program fits on a PowerBook hard drive (using only 5MB of disk space), and unlike the CD-ROMs, Automap tells you how to get where you want to go.

After setting preferences such as driving speed and whether you like to drive on freeways or smaller roads, you tell Automap where your trip begins and ends by selecting points on a map or by entering place names in a dialog box. You can name up to four places that you want to visit (or avoid) along the way. Then you click on Calculate.

In a few seconds, Automap finds the quickest, the shortest, or the preferred route for your journey. Automap draws an easy-to-read map highlighting the route and creates written driving directions with estimated travel times. You can adjust the level of detail and amount of territory the map displays, and then print the map and a separate sheet of directions.



Turn Here Automap's driving instructions tell you how to get where you're going and how long it will take to get there.

To test Automap, I printed maps and driving instructions for businesspeople (well, bike racers and rock bands trying to earn a living) making more than a dozen 3- to 12-day trips throughout the U.S. We still carried road maps, but we didn't refer to them very often. We found Automap's maps and especially its written directions easier to read and handle than the other maps. We all got to our destinations on time.

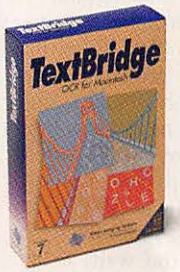
Automap finds recreational areas, reports state driving laws and populations, and lists phone numbers for local tourist and chamber of commerce information.

There is room for improvement. Automap gave a few directions like "Take the Unknown 15 miles." The program can't store more than one set of preferences. And Automap supports cut-and-paste exporting of its maps and data, but not tab-delimited data export. Also, the map window took about 30 seconds to redraw on a 40MHz 030 Mac. Although the lag is annoying, I found the result worth the wait. Still, Automap tells you how to get where you're going better than any other map, atlas, or software I've seen.—JIM FEELEY

Although TextBridge™ OCR software is easier to use, less expensive, and often more accurate, OmniPage® still has its uses.



In a recent independent test on a wide variety of documents, TextBridge OCR provided more accurate recognition on average than OmniPage Professional.



Yet TextBridge is only 1/7th the price of OmniPage Professional—$99 vs. $695.

Available in both PC and Mac versions, TextBridge works with most popular word processing applications, fax modems and scanners (including TWAIN support).

So try TextBridge. Of course, if you want to spend an extra $596, you can just coast along with OmniPage Professional.

To order TextBridge, call
1-800-248-6550 ext.3

Xerox Imaging Systems
A Xerox Company

Benchmark studies referenced tested TextBridge 2.0 and OmniPage Professional 5.0. Prices referenced are U.S. suggested retail prices as of 3/1/94. © 1994 Xerox Imaging Systems. TextBridge is a trademark of Xerox Imaging Systems, Inc. 9 Centennial Drive, Peabody MA 01960 Telephone: 508-977-2000. OmniPage is a registered trademark of Caere Corporation.

Circle 100 on reader service card

Financial Competence 1.5

Business Economics Tutorial

PROS: Easy to use; explains financial statements in easy-to-understand terms. **CONS:** Undistinguished graphics; overpriced. **COMPANY:** Competence Software (603/435-5098). **LIST PRICE:** $99.

MW ★★

IF YOU'VE EVER LOOKED AT FINANcial statements and found them intimidating or just plain baffling, then the maker of Financial Competence wants you. Its seven-lesson system demystifies three basic types of financial statements—income statements, balance sheets, and cash-flow statements. Text, simple graphics, and basic animation make these instruments and their relationships comprehensible to businesspeople, students, and the general public.

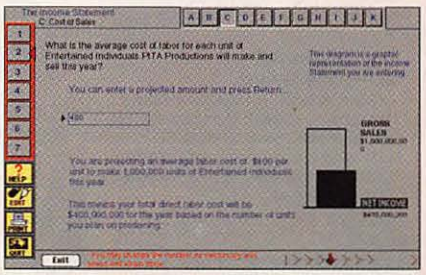
Lessons consist of several sections and a quiz. You're encouraged to proceed in order; after scoring at least 80 percent on all quizzes, you receive an on-screen certificate. The program tracks your progress so you can quit and continue later where you left off. A browse mode lets you explore the program but without a "reward."

At various points Financial Competence prompts you for information about your business; you can supply real or made-up data. For example, in the lesson on income statements, you learn what cost of sales consists of by entering cost figures for material, labor, and overhead. The tutorial then uses these, and other numbers you provide, to explain the connections between various financial-statement entries—the effect cost of sales has on gross margin, for example, or the relationship of operating expenses to operating income. You can export data from the program to a spreadsheet or word processor.

Much of the information in financial statements involves where a business's money comes from and where it is spent. To demonstrate this, Financial Competence frequently shows an animated wad of currency moving from one graphic (such as a bank) to another (such as a factory). Unfortunately, these animations are painfully slow, even on a Mac IIsi with 5MB of RAM. While it does help convey the idea of cash flow, by the 15th journey or so, the traveling money becomes extremely annoying, and there's no option to shut off animations.

The program comes in a canvas moneybag stuffed with packing paper printed with pictures of 20-, 50-, and 100-dollar bills. And all in all, it's a mixed bag. You needn't worry that the tutorial is too complicated for a nonbusinessperson (like me); Financial Competence assumes no prior knowledge of financial statements. Everything is explained in fairly basic terms, new information is introduced very slowly, and some concepts are repeated several times. Like the cash-flow animation, this approach may facilitate comprehension, but it might also make you impatient after a while.

As advertised, Financial Competence explains how financial statements are compiled and how they relate to each other. You could learn the same thing from a book, though, faster and for less money. And that might be the more financially competent thing to do.—MICHAEL ROSENTHAL



Facing the Figures Financial Competence uses data you supply to demonstrate how financial statements are put together.

Small Blue Planet 1.2.1

Educational CD-ROM

PROS: Nicely integrated collection of beautiful Earth-from-space images; users can add custom pop-up annotations; includes world map showing pattern of day and night. **CONS:** Lacks many features of standard atlases; text is poorly edited; no search function. **COMPANY:** Now What Software (415/885-1696). **LIST PRICE:** $79.95.

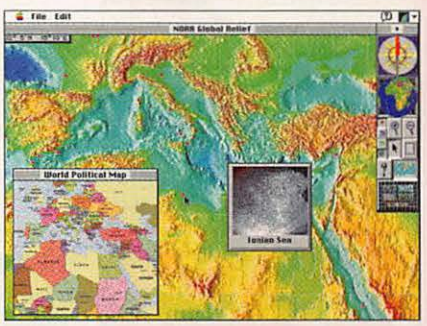
MW ★★★

SMALL BLUE PLANET: THE REAL PICture Atlas is a nicely integrated compilation of Earth-from-space images from many sources, including the CIA, NASA, the U.S. Geological Survey, and the National Oceanic and Atmospheric Administration. This visually stunning CD-ROM is organized around three main images: a global relief map composed of satellite images that colorfully display both oceanic and continental contours; a mosaic relief map of the 48 contiguous United States, dramatically rendered in shades of gray; and a somewhat disappointing political map of the world showing only countries—current as of November 1993—and national capitals.

You can zoom in on any of the main maps in ever greater detail, or soar across the globe in any direction. In addition, Small Blue Planet pinpoints smaller-scale images with red markers; one click on a marker opens a thumbnail preview, and another click displays the image at full size. While pop-up location identifiers are available in many small-scale images, there is little logic to what is identified—Genoa and Venice, for example, but not Rome—and some identifiers (such as Kilauea Volcano) are positioned incorrectly. You can also add your own pop-up annotations to any image. A window containing country-specific data is available in the main political map, and you can obtain information—often either incomplete, too technical, or blatantly promotional—on every image.

A separate part of the program, the Chronosphere, dramatically (and dynamically) illustrates the pattern of day and night on the world relief map. A Gallery section displays thumbnail pictures of all the disc's images (sorted first by type of remote sensor, then by image title), but inconveniently, no search function is available to quickly locate an image of a given location.

Small Blue Planet is not as comprehensive as a standard reference atlas, and it lacks many atlas features, such as distance scales, a master index, and information to help you interpret map colors or contours. Some small-scale images are not accessible from the most logical main map; for example, you can reach a beautiful mosaic relief image of Italy from the main political map but not from the relief map. Other problems include a manual that's too brief, some poorly edited text in the program, and a lack of overall online help. But maps and Earth-from-space images are endlessly fascinating, and the contents of Small Blue Planet are no exception.
—ROBERT C. ECKHARDT



Around the World in One CD-ROM In Small Blue Planet's main relief map you can view a small political map of the same area; a small window in the upper-left corner displays the latitude and longitude of the pointer.

COMPUTER DISCOUNT WAREHOUSE™

CDW® YOUR COMPLETE SOURCE FOR MACINTOSH SOFTWARE

Mac Deal$™ says: "Any order under $200.00 ships for only **$2.99**."



MultiSpin 3X CD-ROM Drive

◆195ms Access ◆450KB/sec Data Throughput ◆256KB Continuous-Flow Cache ◆ MPC Level 2, PhotoCD Multisession, and QuickTime Compliant ◆ Switchable SCSI-1/SCSI-2 Interface

3Xe External

ONLY! **$558.92** CDW 32243

CDW® =

- ✔ The premier direct marketer of PC products
- ✔ 10 years in business
- ✔ Most orders ship the same day
- ✔ Toll-free technical support for CDW customers

Total commitment to customer satisfaction



DeskWriter 560C Color Inkjet Printer

● 600 x 300 dpi with Resolution Enhancement ● 24-bit (16.7 million) color support ● 256 grayscale levels ● Up to 3 ppm print speed ● 3 year limited warranty ● 35 TrueType scalable fonts ● AppleTalk and serial interfaces ● Prints on plain or glossy paper, transparencies, and envelopes

ONLY! **$585.85** CDW 39509

US Robotics



US Robotics Mac&Fax Sportster 14.4K bps data /fax modem

✔ 14.4K bps (V.32bis) data ✔ 14.4K bps (V.17) fax ✔ V.42/V.42bis error control/data compression ✔ Includes Micro-Phone LT and FAXstf software ✔ Includes all necessary cables and adapters ✔ 5 year parts and labor warranty

ONLY! **$149.30** CDW 29443

Adobe

Acrobat Exchange 1 user	125.69
Dimensions	119.55
Illustrator V5.0	366.48
Photoshop V2.5.1	547.44
Photoshop V2.51 DLX CD	615.94
Premiere V3.0	444.38
Premiere V3.0 DLX CD	508.31
Streamline V3.0	127.87
Super ATM	93.06
Type Basics	119.98
Type Manager V3.6	39.86
TypeSet Value PK	38.76

Aldus

Datebook Pro V2.0	44.45
Fetch V1.2	162.77
Freehand V4.0	369.35
Gallery Effects Vol. 1	125.54



Aldus Pagemaker V5.0

ONLY! **$549.56** CDW 33016

Home Publisher V1.0	44.53
IntelliDraw V2.0	45.15
Pagemaker V5.0	549.56
Persuasion V2.1	304.31
Pre-print V1.6	311.35
SuperCard V1.6	125.54
SuperPaint V3.5	44.92
Touchbase Pro V3.0	44.34

Altsys

EPS Exchange V2.0	85.93
Fontographer	248.84
Metamorphosis Pro V2.04	85.94

Ares

Font Chameleon V1.0	172.53
Font Hopper	39.24
Fontmonger V1.5	89.11

Aladdin SitCom	63.82
Aladdin StuffIt Space Saver	34.06
Avery MacLabel Pro	45.89

Broderbund

Automap Atlas	55.67
Bannermania	21.26
Carmen Sandiego/Time	29.20
Carmen Sandiego/USA DLX	39.24
Carmen Sandiego/World DLX	39.24
Carmen Sandiego/World DLX CD-ROM	53.85
MYST CD-ROM	48.28
Patton Strikes Back	12.28
Playmaker Football	12.28
Prince of Persia	29.45
The Printshop Deluxe	47.35
Typestyler V2.0	119.16
BestWare MYOB Accounting V4.0	99.54

Caere

OmniPage Direct	87.14
OmniPage Pro V3.0	299.65
OmniScan	375.87

Central Point

Anti Virus	41.58
MacTools V3.0	86.50
Safe and Sound	29.37

Claris

Brush Strokes	45.55
Brush Strokes Comp Upg	71.21
ClarisWorks V2.1	165.72
FileMaker Pro V2.1	247.71
FileMaker Pro V2.1 Comp Upg	109.98
Impact V1.0	247.71
MacDraw Pro V1.5	248.51
MacPaint V2.0	79.08
MacProject Pro V1.5	371.52
MacWrite Pro V1.0	85.19
MacWrite V1.1	82.49
Power to Go V2.0	26.21
Retreive It!	26.21

Connectix

Desktop Utilities	55.72
Maxima V2.0	43.33
On the Road V1.0	55.72
PowerBook Utilities	55.72
RAM Doubler	55.70

Colorage Freedom of Press Classic	79.59
CompuServe Membership Kit	24.64
Corel Gallery V1.0	33.63
Corel SCSI!	65.44

Dantz

Diskfit Direct V1.0	29.78
Diskfit Pro V1.1	69.60
Retrospect Remote V2.0	245.78
Retrospect V2.0	136.68

Datawatch

Citadel w/Shredder	59.07
ScreenLink V2.0 2 user	59.07
Superset Utilities	81.10
Virex V5.0	59.07

Delrina

DelrinaFax V1.5	79.62
Far Side Daily Planner	38.59
Intermission Screen Svr	26.30
Opus & Bill Screen Svr	29.60

Deneba

Artworks V1.0	98.49
Canvas Tool Packs	34.51
Canvas V3.5	252.30
Ultra Paint V1.03	53.80

Dataviz MacLink+/PC Connection	115.43
DCA Crosstalk	113.90

Electronic Arts

Chuck Yeager's Air Combat	35.66
Cyberplasm Formula CD	32.94
Deluxe Music V3.0 CD	86.52
Harpoon II CD	41.60
PGA Tour Golf CD	35.66
Populous CD	29.40
Total Distortion CD	78.12
V for Victory II	41.60
Vampires Coffin CD	39.19

Entertainment

Berkeley After Dark V2.0	28.29
Berkeley Disney Screen Svr	27.81
Berkeley More After Dark	23.88
Berkeley More After Dark	23.87
Berkeley Star Trek Screen Svr	28.45
Comptons Business Backround	25.30
Comptons Consumer Info	25.31
Comptons Deep Voyage	25.30
Comptons Full Bloom	25.30
Comptons Home Remedies	25.30
Comptons Jets & Props	37.11
Comptons King James Bible	16.57
Comptons Majestic Places	25.30
Comptons Movies	25.31
Comptons Tropical Rainforest	25.30
Comptons Wild Places	25.30
LucasArts Indiana Jones Last Crusade	21.00
LucasArts Loom	18.00
LucasArts Secret of Monkey Island	21.00
Maxis A-Train w/Contruct Set	29.14
Maxis DoodleMation V1.0	18.32
Maxis EL Fish	34.15
Maxis Robosport	23.28
Maxis SimAnt	29.12
Maxis SimCity 2000	39.82
Maxis SimCity Classic	23.28
Maxis SimEarth	29.12
Microprose Civilization	44.53
Microprose Railroad Tycoon	19.82
Microprose Rex Nebular	38.98
Paramount Jump Raven CD	38.98
Paramount Lunicus CD	38.94
Paramount Movie Select CD	34.19
Paramount Rock, Rap and Roll CD	38.98
Passport Music Time/Trax bundle	145.33
Passport Trax	59.68
Psygnosis Lemmings	34.21
Psygnosis Lemmings II	34.21
Psygnosis More Lemmings	28.47
Velocity Rev Spectre VR	34.19
Velocity Development Spectre VR CD	38.98
Virgin 7th Guest CD	49.11

Fractal Design

Colorstudio V1.5	443.61
Painter V2.0	246.36
Painter/X2	84.33
Sketcher V1.0	48.90

Frame Technology

Framemaker V4.0	559.75
Framereader	74.51



Adobe Illustrator V5.5 NEW

CALL

Farallon Timbuktu V5.0	105.55
Freesoft White Knight 11	83.52
Golden Triangle TimesTwo	81.72
Gryphon Morph V2.0	139.60
Hayes Smartcom III V3.4	79.58
HSC Kai's Powertools V2.0	98.59

Inline

Cogito V1.0	34.19
Deliverance	28.47
Firefall	28.47
Icon 7	44.53
INITpicker V3.0	38.98
Spin Doctor	34.24
Super Maze Wars	28.34

Insignia

Access PC V3.0	79.92
RapidCD V1.0	41.57
RapidTrack V1.0	57.67
Soft PC V3.0	99.34
Soft PC with Windows	302.25
Solutions Pro V3.1	179.98

Interplay

Battlechess	17.91
Battlechess Enhanced	44.56
Checkmate	31.33
Dvorak on Typing	28.47
Out of this World	34.27
Peter Gabriel XPLORA 1	47.06
Star Trek 25th Anniversary	34.19

IMSI TurboCAD V1.0	75.69
Informix Wingz V1.1	241.66
Intuit Quicken V4.0	42.93

Kent Marsh

Cryptomatic V1.0	55.15
Foderbolt V1.02	69.27
Foderbolt/Nightwatch bundle	119.91
Quick Lock V2.1	17.91

Lotus

1-2-3 V1.1	276.77
1-2-3 V1.1 Comp Upg	98.56
1-2-3 V1.1 Server	332.35
1-2-3 V1.1 Server Upg	98.56

Light Source OFOTO V2.03	189.92



Microsoft Word V5.1

ONLY! **$299.71** CDW 29650

Macromind

Macromedia Action Bundle	269.46
Macromedia Director V3.1	669.24
Macromedia Director V3.1 Upg	352.82
SoundEdit Pro	189.16
Swivel 3D Professional	278.72

Microsoft

Cinemania 1994	53.44
Excel V4.0	298.78
Excel V4.0 Upg	116.54
File V2.0	123.01
Flight Simulator V4.0	43.31
Foxpro Professional Upg V2.5	265.58
FoxPro V2.5	95.20
Office V3.0	453.36
Office V3.0 CD	469.83
PowerPoint V3.0	299.71
PowerPoint V3.0 Comp Upg	121.07
PowerPoint V3.0 Vers Upg	102.76
Project V3.0	418.86
Project V3.0 Comp Upg	139.24
Project V3.0 Vers Upg	121.49
Word V5.1	299.71
Word V5.1 Comp Upg	116.65
Word V5.1 Vers Upg	89.95
Works V3.0	151.85

No Hands Common Ground V1.0	89.43
Now Software Now Up-to-Date V2.1	59.49
Now Software Now Utilities V4.0.1	77.50
Disk Manager	31.29
QuarkXpress V3.3	602.42

Ray Dream

AddDepth V1.0	115.01
Designer V3.0	223.59
JAG II	85.27

Sierra On-line

Freddy Pharkas	23.77
Hoyle Classic	28.47
Hoyle II	28.45
Japanese Alive CD	102.62
Kings Quest V	38.97
Kings Quest VI	44.53
Leisure Suit Larry 1	17.91
Leisure Suit Larry 5	23.89
Nova 9	19.90
Police Quest 3	38.97
Police Quest 4	38.98
Space Quest IV	23.01
Stellar 7	11.91

Spectrum Holobyte

Falcon V2.2	35.28
Iron Helix CD	56.89
Super Tetris	29.78
Tetris	24.07
Wordtris	29.78

Symantec

ACT! V1.1	156.77
Autodoubler V2.0	58.38
Disklock V2.1	119.22
Greatworks V2.0	84.32
More V3.1	248.45
Norton PowerBook Essentials V1.1	83.72
Norton Utilities V2.0	93.62
PYRO! V4.1	27.33
SAM AntiVirus V3.5	64.22
Suitcase V2.1	49.74
Superdoubler V1.0	77.22

Software Ventures MicroPhone Pro	132.12
T/Maker Incredible Image Pak	79.74

WordPerfect

LetterPerfect V2.1	59.50
WordPerfect V3.0	273.87
WordPerfect V3.0 Comp Upg	75.81
WordPerfect V3.0 Vers Upg	47.34
Works V1.2	144.72
Works V1.2 Upg	79.71

If You Find a Better Price, Call CDW® Before You Buy (800) 509-4CDW

NASDAQ

BUY WITH CONFIDENCE
CDW® IS A NASDAQ TRADED COMPANY
TICKER SYMBOL CDWC
D & B Rated 4A1
Duns 10-762-7952

No Surcharge For Credit Cards

VISA DISCOVER MasterCard

Credit Card charges are not submitted until time of shipment. Freight is calculated as the carrier's actual freight charge plus insurance and packaging material. The cost of insurance is 0.35% (0.0035) of the order total. Packaging materials will not exceed $4.00 per 1 package order or $6.00 per multi-package shipment. For your protection we ship only to your verified billing address. Non-defective returns subject to restocking fee. Allow 10 business days for shipping when paying by personal check. Software, chips and other electronic components are not returnable. All pricing subject to change. ™ - Trademarks of all companies listed in this ad.

CDW® HOURS
Sales 7:00 -9:00 CDT Mon-Fri.
9:00-5:00 CDT Sat.
Tech Support for Customers
8:00-7:00 CDT Mon-Fri.
9:00-5:00 CDT Sat.

Free technical support for CDW customers: 800-383-4239

COMPUTER DISCOUNT WAREHOUSE™

CDW

Monitors

eMACHINES

T16II 16" color	1199.00
E20 20" color	1587.92
T20 20" color	2427.02

NEC

3V 15" flat sq	478.79
3FGe 15" flat sq	577.17
4FGe 15" flat sq	629.81
5FGe 17" flat sq	998.50
5FGp 17" flat sq	1129.20
6FGp 21" flat sq	1999.00

MAGNAVOX

CM2080 14" .28mm	249.80
20CM64 20" .31mm	999.00

SONY

1430 14" trinitron	497.00
1730 17" trinitron	997.00
17se1 17" GDM-series trinitron	1147.00

Radius

Monochrome 15" Pivot	563.65
Precisioncolor 15" Pivot	817.31
Precisioncolor 17" full pg	1233.96
20GS 20" mono dual pg	797.88
Precisioncolor 20" dual pg	1696.98
Intellicolor 20"	1922.29

RasterOps

Clearvue 15" mono full pg	397.06
Sweet 16" color full pg	934.32
21" mono dual pg	1088.79
20/20 20" color full pg	1497.82
21" color dual pg	2319.71
20T 20" color .30mm	2387.58

SUPERMAC

Supermatch 17T 17" color	1043.93
Platinum 20" mono full pg	837.98
Supermatch 20+ 20" color	1658.36
Supermatch 20TXL 20" color	2447.99

Graphics/Video Boards

eMACHINES

Futura II SX	297.71
Futura II LX	769.39
Futura II Ethernet upg	256.97
Ultura LX	1087.01
Simply TV	376.92
Powerlink Presentor	417.05

Radius

Precisioncolor 8XJ 8-bit	461.38
Precisioncolor Pro 24XP	445.28
Precisioncolor Pro 24X	1387.36
Photobooster 040/66	727.55
Powerview for PowerBook/Classic	489.82
VideoVision	1513.59

RasterOps

8XL 8-bit 1MB	456.53
8XLI 8-bit 1MB	829.92
24MX 24-bit 2MB	498.11
24STV 24-bit	717.15
24XLI 24-bit 3MB	1613.55
PaintBoard 8LI 8-bit 1MB	317.72
PaintBoard Lightning 24-bit 3MB	777.22
PaintBoard Turbo 24-bit 3MB 7"	1122.83
PaintBoard Turbo 24-bit 3MB XL	1127.89
PhotoPro	509.81
Moviepak2	1525.69
Mediatime	1525.69
CorrectColor Calibrator	1533.77

SUPERMAC

Spectrum/8 Series III	389.76
Spectrum/24 Series IV	797.54
Thunder/8	1119.27
Thunder/24	1697.02
Thunder 24 DSP upg	519.45
Thunder II Light	1746.97
Thunder II	2302.92
Thunderstorm for Photoshop	427.82
Supermatch Calibrator	348.20
Videospigot NuBus	363.39
DigitalFilm	2946.65

NETWORKING

ASANTÉ

AsanteView V2.2	218.36
10THUB 12 port 10BT +AUI/BNC	457.01
10THUB 8 port 10BT +BNC	209.88
AH1012 12 port 10BT +RJ21/BNC/AUI	829.92
SNMP Module-AH1012	262.00
AH1709 12 port 10BT RJ21/BNC/AUI w/bridge	2078.30
Asantelite LC-10T 10BT	102.94
Asantelite LC-TN Coax	109.06
Asantelite NB-10T 10BT	109.06
Asantelite NB-TN Coax	115.91
AsantePrint 1001 APL Bridge RJ45/AUI	327.89
AsantePrint 1002 APL Bridge AUI/BNC	334.23
AsantePrint APL Bridge RJ45/AUI	327.37
FN10TA Transceiver RJ45/AUI	55.40
FNIISITN Coax w/transceiver	229.16
FNIISITNMC 10BT w/transceiver	321.10
FNIITN Coax w/transceiver	196.53
FNTKA Transceiver AUI/AUI	65.25
FNTNA Transceiver BNC/AUI	61.80
MacLCTNIII Coax	149.81
MC+30IIE64 Coax	149.81
MC+30IIET64 10BT	149.81
MC+LCIII Combo	176.81
MC+SEE Coax	149.81
MC+SEET 10BT	149.81
MC3IISI Combo	196.53
MC3NB Combo	187.04
MC3SE Combo	196.53
McLC10TIII 10BT	149.81
MCLC10TMCII 10BT w/FPU	242.31
Mini EN/SC SCSI Combo	295.59
Mini EN/SC10T SCSI 10BT	234.16
EN/SC SCSI Combo	301.40
MR/LC Token Ring 16/4	392.95
MR/SE Token Ring 16/4	392.95

Dayna

Network Vital Signs	239.93
Netscope System bundle	599.22
SafeDeposit V1.3	79.35
SafeDeposit for AppleShare Servers	245.64
Daynaport E/LC Coax	111.09
Daynaport E/LC-T 10BT	103.68
Daynaport E/LC-A AUI	147.97
Daynaport E/LC-M Combo	164.26
Daynaport E/Z Combo	245.91
Daynaport SCSI/Link Coax	254.50
Daynaport SCSI/Link-T 10BT	254.50
Daynaport SCSI/Link-3 Combo	298.51
Daynaport SCSI/Link PB Coax	274.18
Daynaport SCSI/Link PB-T 10BT	274.18
Daynaport SCSI/Link PB-3 Combo	305.89
Etherprint APL Bridge BNC/AUI	336.90
Etherprint-T APL Bridge RJ45/AUI	329.02
Etherprint-3 APL Bridge BNC/RJ45/AUI	369.96

FARALLON

EtherWave AAUI Transceiver 10BT	103.54
EtherWave AUI Transceiver 10BT	103.59
EtherWave LC Adapt. 10BT	294.90
EtherWave LC-F Adapt. w/FPU 10BT	183.80
EtherWave NuBus Adapt. 10BT	183.80
EtherWave Adapt. (PwrBk, Classic) 10BT	297.98
EtherWave Newton Adapt. 10BT	297.98
EtherWave Printer Adapt. 10BT	297.98
EtherMac LC-10T 10BT	103.50
EtherMac LC-10TF 10BT w/FPU	246.96
EtherMac LC-C Combo	178.31
EtherMac LC-CF Combo w/FPU	296.91
EtherMac LC-TN Coax	125.21
EtherMac LC-TNF Coax w/FPU	246.96
EtherMac SCSI-TN (Classic, Mac+) Coax	269.93
EtherMac SCSI-TN (PowerBook) Coax	282.06
EtherMac SCSI-TP (Classic, Mac+) 10BT	269.59
EtherMac SCSI-TP (PowerBook) 10BT	296.91
EtherMac SE-C Combo	151.49
Ether10-T transceiver RJ45/AAUI	68.19
Ether10-T transceiver RJ45/AUI	68.19
LocalPath V1.0 8 user	134.97
PhoneNET Connector DIN-8	28.74
PhoneNET Connector DIN-8 10pk	199.19

Communications/Modems

Global Village

PowerPort Bronze 2400 Int.	88.55
PowerPort Silver 9600 Int.	243.90
PowerPort Gold 14.4K Int.	273.34
PowerPort Mercury 19.2K Int.	314.37
TelePort Bronze 2400 Ext.	89.84
TelePort Silver 9600 Ext.	249.45
TelePort Gold 14.4K Ext.	273.60
Teleport Mercury 19.2K Ext.	314.37
GlobalFax Duo software	76.65

Hayes

Mac ACCURA 2400	75.76
Mac ACCURA 9600/FAX96	152.26
Mac ACCURA 14.4/FAX14.4	161.49
Mac OPTIMA 2400/FAX96	134.27
Mac OPTIMA 9600/FAX96	349.95
Mac OPTIMA 14.4/14.4 Pocket	316.16

PRACTICAL PERIPHERALS

Mac 14.4/14.4 FXMT	189.50
Mac 14.4/14.4 Pocket	314.59
Mac 14.4/14.4 FXSA w/LCD	404.87

Supra

Mac 14.4/14.4 w/LCD	219.40
Mac LC 14.4/14.4	153.20
Mac PowerBook 14.4/14.4 Int.	219.55

US Robotics

Mac Sportster 14.4/14.4	199.80
Mac WorldPort 14.4 Pocket	235.00

Storage Systems

FWB

FWB Hard Disk ToolKit	125.62
Hard Disk ToolKit Personal	49.95
PocketHammer 170MB	459.03
PocketHammer 240MB	534.91
PocketHammer 530FMF 530MB	994.23
PocketHammer 1000FMF 1.0GB	1179.48
PocketHammer 1600FMF 1.6GB	1799.48
PocketHammer 2100FMF 2.1GB	2319.04
HammerPB 210MB PowerBook Int.	604.44
HammerPB 340MB PowerBook Int.	644.42
Hammer 2000FMF 2.0GB	2579.54
Hammer 2100FMF 2.0GB	2355.48
Hammer 2800FMF 2.8GB	3149.86
HammerDisk 44MB Syquest	449.83
HammerDisk 88MB Syquest	613.18
HammerDisk 105MB Syquest	534.61
HammerDisk 130MB Optical	1099.95
HammerDisk 600MB Optical	2449.10
HammerTape 525MB External	937.50
SCSI JackHammer	619.30
SledgeHammer 2000FMF 2.0GB	2239.72
Hammer external enclosure	153.34

I-MEGA

MacFloptical 21MB	449.86
MacTransportable Bernoulli 90MB	339.42
MacInsider Bernoulli 150MB	499.83
MacTransportable Bernoulli 150MB	489.60

Micronet

C Pack 80MB	397.80
C Pack 120MB	386.46
C Pack 240MB	475.18
C Pack 155MB Tape Drive	729.87
C Pack 600MB Tape Drive	911.12
SS-240 240MB Ext.	492.99
SS-313 323MB Ext.	1069.86
SS-414 430MB Ext.	812.95
SS-540 540MB Ext.	1076.78

PLI

Infinity 88MB Syquest Int.	399.95
Infinity 88MB Syquest Ext.	489.90
Infinity 105MB Syquest Int.	357.10
Infinity 105MB Syquest Ext.	416.98
Infinity 270MB Syquest Int.	534.62
Infinity 270MB Syquest Ext.	614.61
Infinity 21MB Floptical Int.	317.72
Infinity 21MB Floptical Ext.	379.34
Ininity 1.3GB MaxOptical Ext.	2828.23
Infinity 600MB MaxOptical Ext.	1435.09
Infinity 600MB Optical Ext.	2458.57
PLI 44MB Syquest Cart formatted	74.47
PLI 88MB Syquest Cart formatted	109.32
PLI 105MB Syquest Cart formatted	72.27
PLI 270MB Syquest Cart formatted	105.01

SCSI hard drives

Conner 343MB SCSI-2	335.99
Conner 1.0GB SCSI-2	885.62
Micropolis 1.05GB SCSI-2	969.72
Micropolis 1.05GB AV SCSI-2	919.75
Micropolis 1.75GB SCSI-2	1189.05
Micropolis 1.76GB AV SCSI-2	1239.53
Micropolis 3.0GB SCSI-2	2039.00
Seagate 1.0GB SCSI-2	858.22
Seagate 1.69GB SCSI-2	1589.60
Seagate 2.1GB SCSI-2	1546.38
Seagate 2.9GB SCSI-2	2149.65

Input Devices

CalComp DrawingSlate series

6x9 corded pressure stylus	236.24
12x12 cordless 4B cursor	245.55
12x12 cordless 16B cursor	245.55
12x12 cordless pressure stylus	474.52
12x18 cordless 4B cursor	369.53
12x18 cordless 16B cursor	369.53

EPSON

Epson 800C Pro	1247.94

Logitech

Logitech MouseMan	63.80
Logitech TrackMan	49.88
Logitech ScanMan 32	258.20
Logitech FotoMan Plus	568.61

Microtek

35T Slide Scanner	1351.23
ScanMaker II	638.80
ScanMaker IIXE	1009.59
ScanMaker Auto Doc Feeder	369.54

Wacom

6x8 Artz ADB, cordless pres stylus	277.49
12x18 Standard, cordless pres stylus	972.95
12x12 Electrostatic, cordless pres stylus	714.70
12x12 UD-series, cordless pres stylus	507.59
12x18 Electrostatic, cordless pres stylus	987.74
18x25 Standard, cordless pres stylus	2554.28
Cordless 4B cursor	99.98
Cordless standard stylus	53.67

CD-ROM/Multimedia

Micronet CD-ROM 325ms	557.43
NEC MultiSpin 3Xe 195ms	558.92
NEC MultiSpin 3Xp 195ms Int.	479.90
NEC MultiSpin 3Xp portable	427.59
NEC MultiSpin 4X Pro	929.11
Pioneer 6 Disc Quadraspin	1149.00
Plextor DM5028 240ms	CALL
Plextor DM3028 240ms Int.	CALL
PLI CD-ROM 200ms	547.16
PLI CD-ROM 295ms Int.	389.32
PLI CD-ROM 320ms	411.36
Toshiba 3401 200ms	468.55
Toshiba 4 Drive Tower 200ms	2489.80
Media Vision PAS 16 NuBus	356.60
Altec Lansing ACS100 Spkrs	125.62
Altec Lansing ACS300 Spkrs/SubW	274.68
Yamaha 10watt Computer Spkrs	69.95
Yamaha Hello Music! MIDI	259.60

Printers

HEWLETT PACKARD

DeskWriter 550C	438.14
LaserJet 4ML	1056.52
LaserJet 4MP	1469.89
LaserJet 4M	1969.64
LaserJet 4Si MX	4508.36
DeskJet 1200C	2095.47

NEC

Silentwriter 640	788.58
Silentwriter 1097	1377.60

TEXAS INSTRUMENTS

microLaser Pro 600 PS23*	1374.71
microLaser Pro 600 PS65	1523.04

*After $60 manufacturer rebate (Ends 6/31/94)

Power Backup

BC250	99.11
BC400	149.59
BC500	189.42
BC500 LAN	199.40
BC600 LAN	249.00
Smart 250 LAN	232.46
Smart 400 LAN	279.67
Smart 500 LAN	309.09
Smart 600 LAN	334.91
Smart 750 LAN	428.53
Smart 900 LAN	525.64
Smart 1250 LAN	659.66
Isobar 4	38.95
Isobar 6	48.38

Performance Upgrades

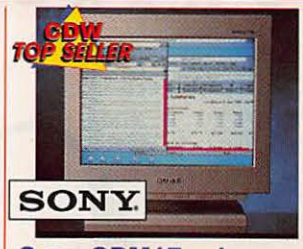
Daystar

PowerCache 33Mhz w/FPU	357.03
PowerCache 50Mhz w/FPU	537.05
Value 040 33Mhz	926.12
Value 040 40Mhz	1069.22
Turbo 040 33Mhz w/FPU	907.30
Quad 040 w/128K	1247.48
Image 040 40Mhz w/128K, DSP	1829.85
FastCache IIci 64K	202.80
FastCache Quadra	295.83
Charger	483.43
Charger Plus	637.46

Memory Upgrades

CDW carries Macintosh-compatible memory upgrades from Technology Works, Kingston, Simple Technology and more.

Call today for the best price!



Sony GDM17se1
Breakthrough Design!

☆ 33% flatter than CPD displays ☆ .25mm aperture grille pitch ☆ On-board diagnostics ☆ All digital controls ☆ Refresh up to 100Mhz @1024x768 ☆ Max. Resolution 1600 X 1200 @ 60Hz ☆ Energy Star and MPR II compliant

ONLY! **$1147.00** CDW 33216

CPD 1730..... **$997.00** CDW 28890



NEC 5FGe
17" .28mm Monitor

ONLY! **$995.50** CDW 33297



Magnavox CM2080
14" .29mm Monitor

ONLY! **$249.80** CDW 38179

Mac Deal$ *says:*
"If you've seen a better price, call us before you buy--because **CDW** *is* ***DEALIN!"***



TM

CDW® YOUR COMPLETE SOURCE FOR HARDWARE & PERIPHERALS

IF YOU DON'T SEE IT... CALL!

CDW® Sells for Less and Services You Better!

800 509-4CDW

FAX (708) 465-6800

©1994 CDW® Computer Centers, Inc. MW963

CALL TODAY FOR OUR FREE MACINTOSH CATALOG.

POWERBOOKS: The Next Genera

MW LAB

APPLE'S NEW NOTEBOOKS BOAST 040 POWER AND A RADICAL NEW DESIGN

BY CARY LU

When Apple introduced the PowerBook line in 1991, it changed the way Macintosh users thought about laptop computers. Previously, Apple's idea of portability was the Macintosh Portable, a 16-pound system that contradicted its name. Now, a million PowerBooks later, Apple's new 68LC040-based 500-series PowerBooks represent a notebook-computer design as radical as that of the original PowerBooks.

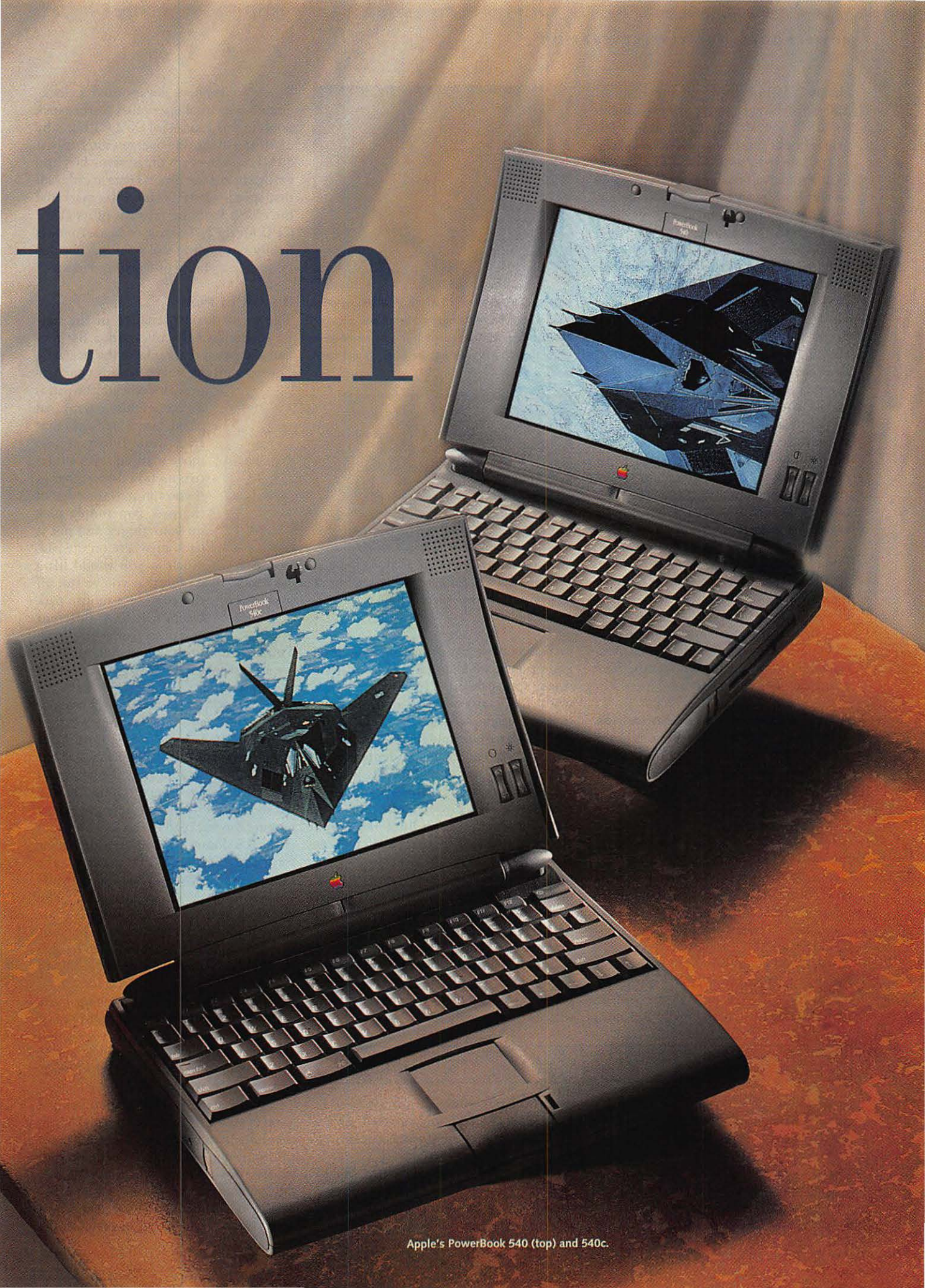
The four 500-series PowerBooks are the first Apple notebooks to offer 040 performance, but they boast much more than a faster processor. On the outside, a new case design, a unique trackpad that replaces the familiar PowerBook trackball, and a larger display give the 500-series PowerBooks a distinctive look. Important, but less apparent, features include a new nickel–metal-hydride (NiMH) battery, an Ethernet interface, 16-bit sound, and provision for either a second battery or PCMCIA (Personal Computer Memory Card International Association) cards.

The New Lineup

Four PowerBooks make up the 500 series and replace all 100-series PowerBooks, except for the 145B ($1599) and 165 ($1869). The PowerBook 520 and 520c have passive matrix screens and use 25MHz 68LC040 CPUs. The 520c also represents Apple's first implementation of color dual-scan LCD technology. The result is a passive matrix color screen that's superior to the 165c's, though still inferior to active matrix screens. Apple prices were not final at press time, but the 520 will cost from $2000 to $2200, and the 520c, from $2600 to $2900. These prices include 4MB of RAM and a 160MB hard drive.

The PowerBooks 540 (64 levels of gray) and 540c (up to 32,000 colors) have active matrix displays and 33MHz 040 processors. The basic 540 configuration ($3000 to $3300) will ship with 4MB of RAM and a 240MB hard drive; the basic 540c ($4000 to $4500) will ship with a 320MB hard drive. The 540 and 540c are also available in a configuration that in-

PHOTOGRAPHS BY MARK JOHANN/SCREEN IMAGES BY JAMES BENSON/CHECK SIX; MIKE DORNHEIM/AIRBORNE



Apple's PowerBook 540 (top) and 540c.

cludes 12MB of RAM and a modem. All 500-series PowerBooks are expandable to 36MB of RAM. And yes, all four 040 PowerBooks can be upgraded to Power-PC 603–based Power Macs. The Power-PC upgrade will enable your PowerBook to run both native-PowerPC code and 680X0 code under emulation.

Upgrading to a PowerPC PowerBook should not be difficult because the 040 CPU resides on a daughterboard, not on the motherboard itself. Making the upgrade to PowerPC will involve only swapping CPU cards. Unlike earlier PowerBooks, the new 500 models open up easily, allowing you to add accessories. Remove two screws and the keyboard comes off, opening up space for three plug-in cards: the CPU daughterboard, the RAM card (which plugs into the daughterboard), and the modem card (see "The Pull-Apart PowerBook"). Changing the hard disk drive is only a little more difficult.

To accommodate all the new features, the new PowerBooks have a slightly larger case—a quarter-inch wider and almost a half-inch deeper than the 100-series PowerBook case; the weight remains about the same but depends on the configuration. The 500-series models look like no PowerBook you've seen before. The new case design shows more curves and angles than the squarish older models; for example, the palm rest at the front of the case curves downward.

A Faster PowerBook—Sometimes

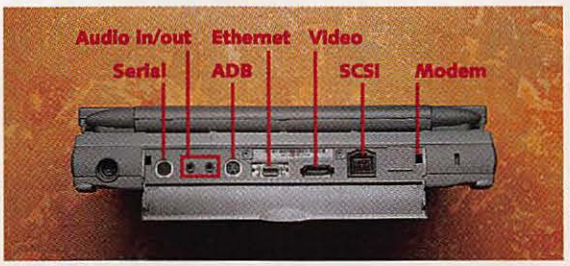
The new PowerBooks are about one and a half to two times as fast as the current 100-series PowerBooks (see "68040 PowerBooks Speed Test," for specific testing results). Overall, performance is about equal to that of Intel 486–based notebooks. The 500-series systems aren't the fastest 040 PowerBooks, however. The new 040 PowerBook Duos, the 280 and 280c, outperform the 500 series because the Duos have faster video circuitry (see "The 040 Duos—The Fastest PowerBooks").

The 68LC040 CPU processor lacks the floating-point unit (FPU) of the full 68040 CPU used in some desktop Macs. An FPU has little effect on applications such as word processors, page-layout programs, database managers, and, for most users, spreadsheets. However, in Macworld Lab's tests on FPU-intensive tasks (mathematics software, CAD, some graphics programs, and spreadsheet calculations involving transcendental functions), 030-based PowerBooks with a coprocessor (165c, 180, 180c) outperformed the 040 PowerBooks. For such numeric processing, an Intel 486–based laptop runs faster still (see "68040 PowerBooks Speed Test"). Expect third-party upgrade specialists to take on the task of unsoldering the CPU and replacing it with a full 68040 chip. The extra power and heat load of the FPU may limit your CPU options, however. According to Apple, a full 25MHz 68040 with an FPU will meet Apple's heat-dissipation guidelines for the PowerBook case, but a 33MHz 68040 with an FPU will not. Also, the 040 processors run only at their rated 25MHz and 33MHz speeds; unlike the 030 CPUs in PowerBooks, the 040 processors cannot be slowed down to 16MHz.

When Apple talks about the 68040 performance of the new PowerBooks, expect to hear the term *clock doubling*. All 68040 CPUs, whether in desktop Macs or PowerBooks, have always used a clock-doubling technology similar to the clock doubling in Intel 486DX/2 CPUs. The 25MHz 040 actually operates internally at 50MHz; however, the system bus and motherboard can process data at only half that speed—25MHz. Intel has marketed the clock-doubling features of its DX/2 CPU for the last couple of years. Apple is finally responding and pointing out this inherent capability of 68040 processors.



Full-Size Keyboard The new PowerBooks offer a full-size keyboard for typing. There's also a row of function keys as well as escape and power-on keys along the top row. Missing are page up and page down keys.



Ethernet for Everyone In addition to ADB, sound-in and -out, video-out, and SCSI ports, the new PowerBooks all feature a built-in Ethernet port. The new notebooks have only a single serial port, which supports LocalTalk.

It's OK to Point

The most obvious change in the new PowerBooks is the trackpad, a flat rectangular patch that replaces the trackball. You operate the trackpad with your finger. Underneath the pad is a rectangular array of capacitance sensors that track your finger as you move it around. It's a relative-motion device; that is, if you run into the edge of the pad, you simply pick up your finger and put it back anywhere on the pad, much as you would lift a mouse that you've run off the edge of a mouse pad. Users will have different reactions to the trackpad. You'll have to give it your full attention for at least five minutes to get a fair sense of how it works.

The trackpad requires the capacitance of your flesh and blood to operate, just like the buttons in many elevators. Your fingernail, a pen, or a stylus will not work; you need to use your finger, fingerprint side down. A large, single "mouse" button sits in front of the pad. You might expect tapping the trackpad to serve as a mouse-click, as it does with most drawing tablets for the Mac. It doesn't. You must use the button, typically with your thumb while your forefinger strokes the pad. The trackpad is not pressure sensitive, although it can detect the size of your fingerprint; future versions might be able to use this information to detect how hard you are pressing down.

The trackpad has no moving parts and nothing to clean. It detects 387 points per inch, so it responds to very small finger movements by locating the center of your fingerprint (see "How the Trackpad Works").

You use the new Trackpad control panel to set the trackpad's characteristics, in the same manner as you use the Mouse control panel, which is still included with the 040 PowerBooks. So if you plug in a mouse, you can adjust the two pointing devices independently. This is an improvement over 100-series PowerBooks, in



Take Control Apple's new modular Control Strip control panel provides battery-status information and quick access to common PowerBook functions. It runs on all PowerBooks, although the twin-battery indicators and remaining-battery-life indicator work only on the 500-series models. You can add or remove modules that you need and shrink the entire display to a small tab.

which the Mouse control panel sets both trackball and mouse simultaneously.

Double Your Battery Life

If you've been frustrated by the battery life of the 100-series PowerBooks, you'll be happy to hear that the 500 series uses high-capacity NiMH batteries. The new PowerBooks accept either one or two batteries, using left and right battery compartments (you flip the battery over when switching sides). Apple ships the 540 and 540c with two batteries; the 520 and 520c ship with one battery.

If you use two batteries, the PowerBook drains the left battery first and then automatically switches over to the right battery. Draining power from one battery at a time simplifies battery management; you can be sure that the left battery is drained and ready for recharging when the computer switches to the right battery. However, this technique forfeits 5 to 10 percent of the potential battery life. All batteries can run for more than twice as long if the current drain is cut in half. If two batteries that drain one after the other last four hours, the same two batteries drained simultaneously at half the current will run for about 20 minutes longer.

When you store the battery, a sliding cover hides the battery's contacts, so you don't need to bother with a battery-storage case. Unlike the metal cover that protects the magnetic media in 3.5-inch floppy disks, the slider doesn't work automatically; you have to move it manually before you insert the battery.

Apple calls the new batteries intelligent because they contain a small processor that communicates to the PowerBook the specific type of battery, voltage, temperature, current, and capacity, all of which change as the battery ages. This information makes it possible to estimate more accurately the PowerBook's performance and remaining capacity. With NiCad batteries, there is no way to accurately estimate remaining battery life because the only information available is the voltage. Even the intelligent estimates can't be completely accurate, however, since the way you use the PowerBook can change dramatically from minute to minute. NiMH batteries tend to be expensive to begin with, and the new PowerBook batteries with this additional circuitry will sell for $120 each. The new PowerBook models also include a Control Strip control panel that displays power information (see the screen image "Take Control"). The Duos use the same battery technology, although neither Duo batteries nor AC adapters are compatible with the 500-series PowerBooks.

If you're using two batteries, you can

The Pull-Apart PowerBook

Unlike the 100-series PowerBooks, the new 500-series notebooks are designed to allow users to get inside easily to add RAM, plug in a PowerPC upgrade card, or install a modem card.

Hard Drive and Bracket
Four screws hold the hard drive to a bracket that in turn attaches to the chassis by two more screws (not shown). It's easy to remove the hard drive for repair or replacement.

RAM-Expansion Card
You add RAM by installing a RAM card in a slot on the CPU card.

CPU Card
The 68040 CPU resides on a daughterboard that plugs into the motherboard. To upgrade to a PowerPC processor, you simply replace the CPU card with the new PowerPC CPU card.

Modem Card
A separate slot on the motherboard accommodates a modem card.

PCMCIA Adapter
You can plug a PCMCIA or a PDS adapter into the left-side battery slot to gain access to either type of peripheral.

Full-Function Keyboard
Remove two screws (not shown) from underneath the unit, and the keyboard comes off.

NiMH Batteries
The slots on either side of the new PowerBooks also accommodate two NiMH (nickel–metal-hydride) batteries. The left-side battery compartment also accepts a PCMCIA or PDS adapter.

Trackpad
The 500-series PowerBooks feature a trackpad, rather than the familiar trackball, and a curved palm rest.



change one at any time. If you're using one battery, the computer holds its RAM for three minutes during sleep while you change the battery. For older PowerBooks, to switch internal batteries without losing the contents of RAM, you need a small external battery source to provide power while you make the switch.

The new 40-watt AC adapter consists of two 20w adapters in a single case (the old adapters were 15w, 17w, and 24w). It can charge one battery while supplying power to the computer. A PowerBook can charge a battery in about two hours. If the PowerBook is shut down or asleep, two spent batteries can be charged in two hours.

The Versatile Left-Side Slot

The left-side battery compartment is also a multipurpose slot that contains a PDS connector in addition to the battery connector. You can leave the left compartment empty (with a dust cover) to save weight (0.8 pound per battery); put in a second battery to double the battery life; or install a hardware accessory such as a cellular modem, data-acquisition device, or the like.

You can also plug an adapter (about $200) into the left-side battery slot and make the 500-series PowerBooks the second Apple product to offer PCMCIA capability (the Newton, of course, was the first). The adapter will take two stacked PCMCIA 5mm-thick Type II cards or one 10.5mm-thick Type III card.

Type II PCMCIA cards typically offer flash memory (a kind of RAM that behaves somewhat like a hard drive, storing information without continuous power), network interfaces, and even mainframe interfaces. Type III cards can, for example, hold a small, 1.8-inch hard drive or a radio communication device. Some PCMCIA cards that are common for DOS/Windows notebooks—system memory enhancements and Ethernet cards, for example—aren't necessary for a PowerBook. A modem card isn't essential for PowerBook users either, but one could be an attractive option for a company that wants to swap modems among a fleet of PowerBooks.

Will PCMCIA cards produced for DOS/Windows notebooks work in a PowerBook? Maybe. At first, Apple says, expect only a small number of cards to work. Apple hopes to convince many card vendors to supply software drivers and possibly make card changes so a wider range of PCMCIA cards will work with the 500-series PowerBooks.

Bigger, Better Display

All four 500-series PowerBooks sport 9.5-inch-diagonal, 640-by-480-pixel screens that display 84 dots per inch. If you're familiar with the 8.4-inch color screen of the PowerBook 180c, you'll notice a big difference in the 500's screen real estate.

The 520's passive matrix screen shows 16 levels of grays; the 520c displays 256 colors. While Apple has always used dual-scan passive matrix LCDs in its monochrome PowerBooks, the 520c is the first color passive matrix PowerBook to use dual-scan technology. Toshiba and Sharp, among others, have used color dual-scan screens in DOS/Windows notebooks for about year. A dual-scan screen is actually two displays with independent scanning circuits butted together. Since a dual-scan screen refreshes twice as fast as a traditional passive matrix screen, the result is a sharper image.

If you've seen the PowerBook 165c, you'll notice that the 520c has distinctly better contrast and a wider viewing angle. Although it doesn't match an active matrix screen, a dual-scan color screen produces good images that you won't mind working with all day and showing off without apology.

The 540's active matrix screen supports 64 shades of gray. The 540c offers 256 colors in 640-by-480-pixel mode or up to 32,000 colors in 640-by-400 mode. The capability to offer both 8-bit and 16-bit color was introduced last October with the Duo 270c. In 16-bit mode, the 640-by-400 image is centered in the middle of the screen with a black band above and below. Unlike with the 270c, you can switch between the two image sizes on the fly without restarting the 540c. Note, however, that software already running when you switch resolutions will not readjust for the screen's size change; the effect of going to a smaller, more colorful screen size is that the PowerBook cuts off the bottom 80 rows of pixels, which can eliminate an essential button or leave windows extending beyond the active screen. For most applications (those with resizable windows), restarting the PowerBook cures window-size glitches.

All 500-series PowerBook screens—including the color ones—use a single backlight, which consumes less power than the twin backlights used in 100-series PowerBooks. Apple estimates the

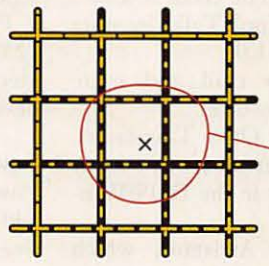
Apple's 040 PowerBooks at a Glance

PowerBook Model	CPU	Configuration (RAM/hard drive)	Maximum RAM	Display Type	Grays and Colors	Screen Resolution	Battery Life (one battery)
520	25MHz 68LC040	4MB/160MB	36MB	9.5-inch passive matrix	16 grays	640 × 480	2.5–4 hours
520c	25MHz 68LC040	4MB/160MB	36MB	9.5-inch color passive matrix	256 colors	640 × 480	2.5–4 hours
540	33MHz 68LC040	4MB/240MB	36MB	9.5-inch color active matrix	64 grays	640 × 480	1.5–5 hours
	33MHz 68LC040	12MB/240MB (with modem)	36MB	9.5-inch color active matrix	64 grays	640 × 480	1.5–5 hours
540c	33MHz 68LC040	4MB/320MB	36MB	9.5-inch color active matrix	256 colors or up to 32,000 colors**	640 × 480 (256 colors); 640 × 400 (up to 32,000)	1.5–5 hours
	33MHz 68LC040	12MB/320MB (with modem)	36MB	9.5-inch color active matrix	256 colors or up to 32,000 colors	640 × 480 (256 colors); 640 × 400 (up to 32,000)	1.5–5 hours
Duo 280	33MHz 68LC040	4MB/240MB	40MB	9-inch active matrix	16 grays	640 × 400	2–4 hours (Type 1 battery)
	33MHz 68LC040	12MB/240MB (with modem)	40MB	9-inch active matrix	16 grays	640 × 400	2–4 hours (Type 1 battery)
Duo 280c	33MHz 68LC040	4MB/320MB	40MB	8.4-inch color active matrix	256 colors or up to 32,000 colors**	640 × 480 or 640 × 400	2–4 hours (Type 1 battery)
	33MHz 68LC040	12MB/320MB (with modem)	40MB	8.4-inch color active matrix	256 colors or up to 32,000 colors	640 × 480 or 640 × 400	2–4 hours (Type 1 battery)

*NA = not applicable. *Weight includes two batteries. **In 8-bit mode, the PowerBook 540c and Duo 280c display 256 colors in 640 × 480 pixel resolution. In 16-bit mode, the 280c displays*

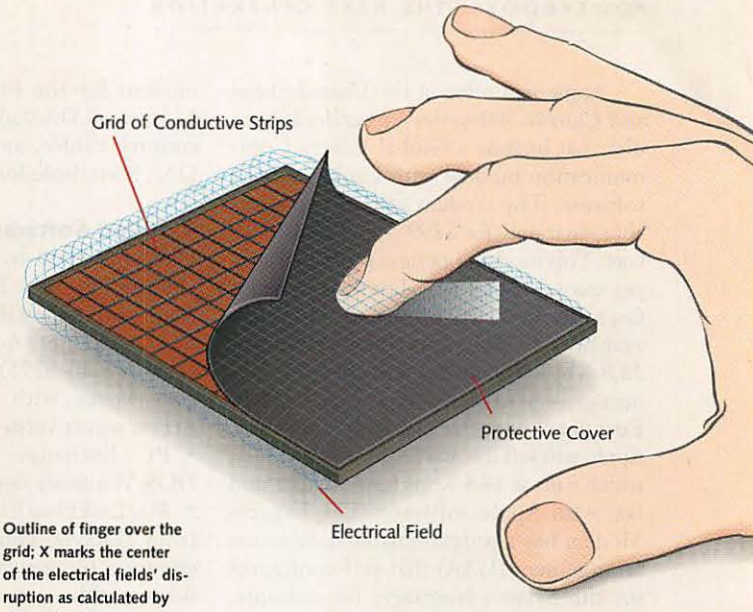
How the Trackpad Works

In Apple's new 500-series PowerBooks, a small, flat, rectangular trackpad replaces the trackball used in 100-series PowerBooks. The trackpad uses capacitance sensing, just like the touch-sensitive buttons in a modern elevator. Instead of the elevator button's single sensor, the trackpad has a grid of conductive strips. Controlling circuits put out high-frequency signals along the strips and sense changes in the electrical field for each strip. This electrical field emanates through and above the surface of the pad. Placing your finger on the trackpad surface disrupts the electrical field for several of the conductive strips. Sophisticated software and hardware calculate the center of this disturbance. By scanning the strips rapidly, the trackpad's circuitry follows the movement and speed of your finger. The trackpad can detect 387 points per inch, so it can track very small movements. Like a mouse, the trackpad is a relative-motion device; when you raise your finger and put it back anywhere on the pad, the cursor stays put.



Dashes represent the amount of disruption in each strip. Smaller dashes represent greater interruption.

Outline of finger over the grid; X marks the center of the electrical fields' disruption as calculated by the trackpad.



same minimum battery life for color and gray-scale models. However, the gray-scale PowerBooks have distinctly brighter screens (at maximum brightness) than the color models do. Set to the same screen brightness as the color PowerBooks, the gray-scale models should run about 15 percent longer.

The new PowerBooks support the same external monitors as before, up to 16 inches in 256-color mode. VGA and SVGA monitors are still driven at a flickery 60Hz and 56Hz, respectively.

Mega RAM

The 500-series PowerBooks accept up to 36MB of RAM, a big step up from the 8MB or 14MB limit of the 100-series PowerBooks. All models have 4MB of RAM soldered onto the CPU daughterboard. Additional RAM goes in a plug-in RAM card. Apple will offer an 8MB card (about $400); third-party memory-card vendors will supply cards in many capacities.

The memory consists of the low-power dynamic RAM used by Duos, although Duo memory cards are not compatible. Apple expects the RAM cards will be compatible with the PowerPC upgrade, but cannot confirm this until the upgrade is built.

The RAM stays alive only during power-on and sleep, so you have to create and save your RAM disk during start-up and shutdown. Apple includes persistent RAM disk software, but you cannot perform a cold start from a RAM disk; you have to start up from the hard disk, load the RAM disk (automatically), and restart.

The Sound of CD Music

The 500-series PowerBooks' sound input and output are true stereo 16-bit sound that provides CD-quality 44.1kHz sampling range, a tremendous improvement over the monaural 8-bit sound with 22kHz sampling in the earlier PowerBooks. The sound-input and -output jacks are standard stereo minijacks; the sound-input jack takes line-level signals directly from a stereo system, rather than microphone-level signals as in earlier PowerBooks. The built-in microphone is, however, monaural. Stereo speakers, suitable for a modest presentation, sit in the corners of the screen lid on all 500-series models. They don't produce hi-fi sound, but they are good enough to delight or irritate an airplane seatmate. Through a stereo system, the sound quality is excellent when recorded and played back at highest quality (10MB per minute).

The Keyboard of a Desktop Mac

The 520, 520c, 540, and 540c are the first PowerBooks to offer full-size Macintosh keyboards—at least in the main typing area—with the same key spacing as on a desktop keyboard. This is possible because the new 500-series cases are slightly wider than previous PowerBook cases. (The 100-series PowerBook keyboard is 97 percent of full size; the Duo's is 88 percent.) An extra row of small keys runs along the top—an escape key, function keys F1 through F12, and a power-on key. The power-on key works like a desktop Mac's, so you no longer need to reach around to the back to power up your PowerBook. Remote-control devices can turn on the new PowerBooks from an ADB port (to turn on the computer with a phone call, for example). Moving the escape key to its normal position at top left leaves space for larger control, option, and ⌘ keys to the left of the spacebar. Apple has also added an LED indicator to the caps lock key. Note that function keys F13 through F15 and the home, end, page up, page down, help, and delete keys are missing. The arrow keys remain in an awkward row instead of in an inverted **T** as on the Apple Extended Keyboard. That's a pity because Apple had the space to position the arrow keys correctly.

Ports and Modems

The new 500-series PowerBooks all include an Ethernet port with a standard Apple Attachment Unit Interface (AAUI). And they have a single serial (printer) port that supports LocalTalk; however, they have no external modem serial-port connector. Their other ports are the standard single ADB, SCSI, and video-out. A Kensington MicroSaver slot mates to a security cable.

Battery Life (two batteries)	Weight (standard configuration)	Price
4–7 hours	6.3 pounds	$2000–$2200
4–7 hours	6.4 pounds	$2600–$2900
3–6 hours	7.1 pounds*	$3000–$3300
3–6 hours	7.1 pounds*	$3600–$3900
3–6 hours	7.3 pounds*	$4000–$4500
3–6 hours	7.3 pounds*	$4800–$5200
NA	4.2 pounds	$2500–2650
NA	4.2 pounds	$3000–$3150
NA	4.8 pounds	$3300–$3600
NA	4.8 pounds	$3800–$4100

thousands of colors in 640 × 400 pixel resolution.

Apple will offer in the United States and Canada 500-series PowerBook bundles that include a Global Village Communication modem with Global Village software. The modem will also be available separately for $399 from Global Village. This modem operates at 19.2 kilobits per second. The 19.2-Kbps terbo speed is fast today, but it will be surpassed later this year by V.34 (V.Fast) modems running at 28.8 Kbps. The terbo modems can connect to 14.4-Kbps and slower modems. In European and Pacific Rim countries, Apple will sell its own Express Modem II, which runs at 14.4 Kbps for both data and fax, with Apple software. The Express Modem has a programmable data-access arrangement (DAA) that self-configures for the System language; for example, starting up in French configures the modem for the French phone system. New, small DAA adapters can change the country choice, and a North American DAA is available for the first time.

Bundled Software

With all 68040-based PowerBooks (including the new Duo 280 and 280c), Apple is bundling the following software:

- Apple Remote Access client (the server version costs $275). The client software also works with AppleTalk Remote Access server version 1.0.
- PC Exchange to read and write DOS/Windows floppy disks.
- MacLinkPlus/Easy Open Translators, from Dataviz, converts between many common file formats in the DOS/Windows world.
- PowerBook File Assistant, which includes file synchronization and a persistent RAM disk.
- Control Strip, a new control panel with power-management features (see "Take Control").
- Calendar, a basic calendar with several ways to view and track appointments.
- HyperCard 2.2 player.
- A coupon for eWorld software, Apple's online information service, which is scheduled to debut in June.
- PowerTalk (for systems sold with 12MB of RAM in the United States), an electronic-mail management extension developed originally for System 7 Pro.

You cannot upgrade a 100-series PowerBook to one of the 500-series PowerBooks. If you buy a 520, 520c, or 540 and then decide you really wanted active matrix color after all, you can upgrade

MW LAB 68040 PowerBooks Speed Test

Best result in each test. Products are listed in decreasing order of overall performance.

CORE-PERFORMANCE INDEX

Times as fast as a Classic (Classic = 1.0).

Use these standard ratings of overall performance, based on a core test suite, to compare systems across classes.

NOTEBOOK-SYSTEM PERFORMANCE TIMES

Times are in seconds. Shorter bars are better.

Use these results to compare the performance of notebooks for different types of real-world business tasks. The results can be compared with any other *Macworld* Performance Times for notebook systems.

	Common	Scientific	Processor	Drive-Access	Video-Display	Floating-Point
	Typical business tasks in Microsoft Excel and Word that use the Mac's processor, drives, and video display.	We added to the common tasks several scientific calculations (which use floating-point math).	Indicates raw processing power, which affects almost all aspects of performance.	Indicates performance for tasks that rely heavily on the hard drive.	Indicates performance for tasks that depend heavily on screen-redraw speed.	Indicates performance for tasks that heavily use a math coprocessor.
PowerBook Duo 280	11.1	12.1	16	32	44	70
PowerBook Duo 280c	10.3	11.5	17	37	52	69
PowerBook Duo 280c*	9.8	10.9	17	38	92	69
Compaq LTE Lite 4/25c	9.7	23.3	24	42	61	18
PowerBook 540	9.6	10.3	17	35	102	77
PowerBook 540c*	8.9	9.9	18	37	180	77
PowerBook 540c	8.8	9.7	19	35	101	78
PowerBook 520	8.8	9.1	20	33	75	101
PowerBook 520c	7.3	7.9	24	38	119	96
PowerBook 180	5.7	11.2	34	55	85	42
PowerBook Duo 270c	5.6	11.6	37	52	83	40
PowerBook Duo 270c*	5.2	11.0	38	51	152	41
PowerBook 165c	5.1	10.9	36	54	158	41
PowerBook 180c	5.1	10.8	36	52	167	42
PowerBook 145B	4.0	4.1	50	64	96	279
PowerBook 160	3.7	3.8	52	70	108	283

*Tested in 16-bit color mode.

BEHIND OUR TESTS

To gauge the performance of Apple's new 040-based PowerBooks, Macworld Lab compared preproduction versions of the 520, 520c, 540, 540c, Duo 280, and Duo 280c with several models in the PowerBook 100 series using our standard test suite for portable computers. To see how the new PowerBooks compare with notebooks based on Intel 486 CPUs, we also tested a Compaq LTE Lite 4/25c. Our tests are designed to measure several aspects of a computer's performance: its computation strength, its math processing power, its capability to shuffle data to and from the hard drive, and its screen-update speed. To reflect real-world use, Macworld Lab tests are based on applications such as Microsoft Excel, Microsoft Word, and Claris FileMaker Pro.

All PowerBooks were tested in their standard configuration, so the amount of RAM and hard-drive capacities vary among different models. All Duos and the PowerBook 540 were tested with 12MB of RAM. All 500-series PowerBooks were tested with 6MB of RAM. For color models, we set the computer to 256 colors; for gray-scale models, we set the system to 4 bits; and for black-and-white models, we set the system to 1 bit. We tested other notebooks with 4MB of RAM. We included the PowerBooks 180, 165c, 180c, and 160, and the Duos 270 and 270c for comparison, but Apple has discontinued these models.—**Macworld Lab testing supervised by Lauren Black and Danny Lee**

It seems like only yesterday that Apple introduced the PowerBook Duos 250 and 270c. Actually, it was way back in October 1993. Those Duos are gone now, discontinued and replaced by the 280 and 280c. You'll notice that the new Duos are outwardly identical to the 250 and 270c (see "New PowerBook Duos," *Macworld,* December 1993). However, on the inside, the new Duos have a 68LC040 CPU, the same one used in the new all-in-one 500-series PowerBooks.

As with the 500-series PowerBooks, the Duos' 33MHz 040 CPU lacks an FPU. The 280 and 280c come with 4MB of RAM soldered on the motherboard. A plug-in RAM card can hold up to 36MB, for a total of 40MB.

In Macworld Lab tests, the new Duos outperformed equivalent 500-series PowerBooks, most likely because of the Duos' faster video circuitry. While the 280 and 280c may be a little faster than their all-in-one counterparts, the Duos still offer only monaural 8-bit sound as opposed to the snazzy 16-bit stereo sound of the 500-series PowerBooks.

The 4.2-pound Duo 280 has a 9-inch active matrix gray-scale screen with 640 by 400 pixels. The 4.8-pound 280c has an 8.4-inch active matrix color screen with 256 colors in 640-by-480-pixel mode, and up to 32,000 colors in 640-by-400 mode. Like the 540c (but unlike the Duo 270c), the 280c can switch between the two color modes without restarting. However, such on-the-fly resolution switching occasionally causes software glitches, so you may want to restart your Duo after you change resolutions anyway.

All current docking stations and other Duo accessories work with the new Duo models. To transform the mobile Duo into a full-featured desktop Macintosh, Apple has introduced a new version of its desktop docking station. The new PowerBook Duo Dock II includes an Ethernet interface (AAUI connector) and supports 21-inch monitors with 256 colors and 16-inch monitors with thousands of colors. (Final pricing was not determined at press time, but Apple says the Duo Dock II will cost between $700 and $900.) With 1MB of VRAM, the original Duo Dock, which continues in the Duo product line, also supports thousands of colors on 16-inch monitors.

The Duo Dock II includes two features used only with 030-based Duos: a 32K RAM cache for the CPU, and an FPU. Neither cache nor FPU in any dock works with an 040 Duo. The old Duo Dock can be upgraded to the Duo Dock II for about $400.

Apple will offer an upgrade to convert any Duo into a 280c by changing both the motherboard and the screen. Apple also plans to offer a PowerPC upgrade for the 280 and 280c.



SCREEN IMAGES BY JAMES BENSON/CHECK SIX

Faster Duos The new PowerBook Duo 280 and 280c look the same as the Duo 250 and 270c, which they replace. However, a 68040 CPU makes the new Duos considerably faster than previous models.

Apple ships a new Type III NiMH battery with the 280c. The new battery will work with any Duo and will be available as a replacement battery along with supporting software (about $85). The Type III battery has 15 percent more capacity than a Type II battery; the Type II battery offers 50 percent more capacity than a Type I battery. All three batteries will work in any Duo, but Apple continues to ship the Duo 230 with a Type I battery, and the Duo 280 with a Type II battery; only the Duo 280c ships with a Type III. If you want to buy a replacement battery, Apple offers only the Type III.

Finally, new software gives Apple's Duo Express Modem 14.4-Kbps fax capability, up from the old 9.6-Kbps speed. If you already have a Duo Express Modem, all you need for faster faxing is a software update (which Apple plans to offer for free on online services) and a receiving fax machine or modem able to connect at 14.4 Kbps. The maximum data-transmission rate remains at 14.4 Kbps.

to a 540c (for about $2000); however, 520/520c units remain 25MHz computers even after the upgrade.

Which PowerBook?

If you're shopping for a PowerBook, which one should you buy? For sheer portability, the new 040 Duos run a little faster and are a lot lighter than the 500-series PowerBooks. But if you want to carry a completely self-contained Macintosh with all the standard ports, a 500-series PowerBook beats a Duo.

Based on Apple's preliminary pricing, the 540/540c costs $1000 to $1500 more than the 520/520c. The extra cost buys a faster processor, a larger hard drive, an active matrix screen, and a second battery. If the price gap closes to about $600, the 540s will be a much better buy; until then, it's a difficult choice. When choosing a PowerBook, consider carefully whether you need color. Not only do color models cost a lot more and consume more power than gray-scale models, but also a color display is hard to see outdoors on a sunny day.

The 500-series PowerBooks are superior to the 100 series in every way except price. If you are on a tight budget (or simply prefer the 100-series design), the 145B and 165 or a used PowerBook are your only options.

A more difficult question: If you already have an all-in-one PowerBook, should you switch to a new model? If you have a PowerBook 100, 140, 145, or 170 and need more capabilities, this is a good time to change over. If you own one of the more recent PowerBooks, you probably won't find an urgent need to switch, unless you have run into serious limits in processor speed or battery life. The PowerBook design is so strong that the 100-series notebooks will remain in use for years after competing notebook computers have been stored in closets. But if you are intrigued by the new trackpad and you want longer battery life, faster processing, more RAM capacity, thousands of colors, PCMCIA capabilities, and the option of upgrading to a PowerPC CPU, you won't be disappointed in the new-look 500-series PowerBooks. **m**

Contributing editor CARY LU writes *Macworld*'s *PowerBook Notes* column.

INTRODUCING DIRECTOR 4.0:
EASIER, AND A WHOLE LOT C

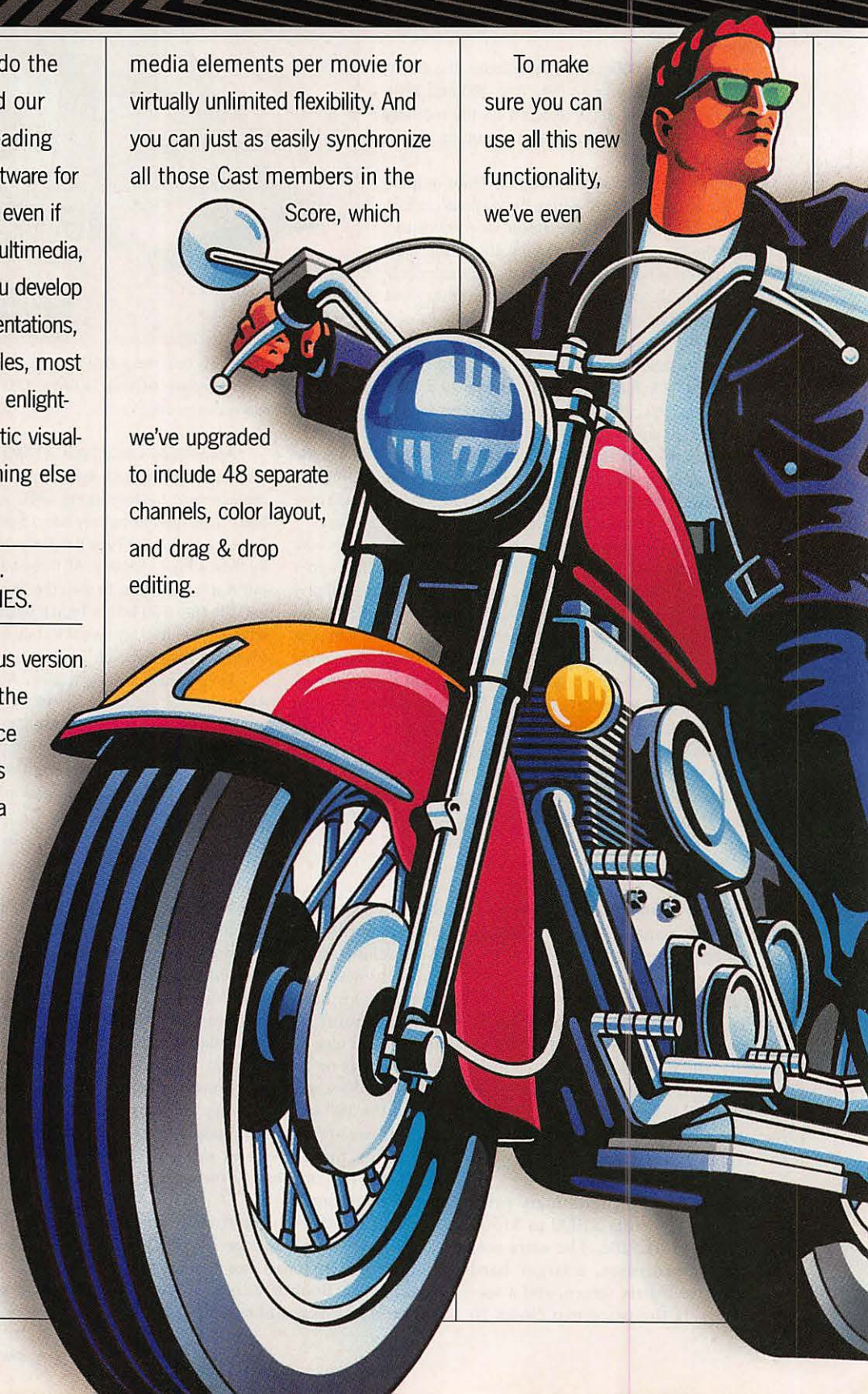
If you really want to do the cool stuff, climb aboard our newest version of the leading multimedia authoring software for the Macintosh®. Because even if you've never worked in multimedia, Director® 4.0 can help you develop the most persuasive presentations, most inspired CD-ROM titles, most entertaining kiosks, most enlightening demos, most realistic visualizations, and most anything else you have in mind.

DEVELOPERS...
START YOUR ENGINES.

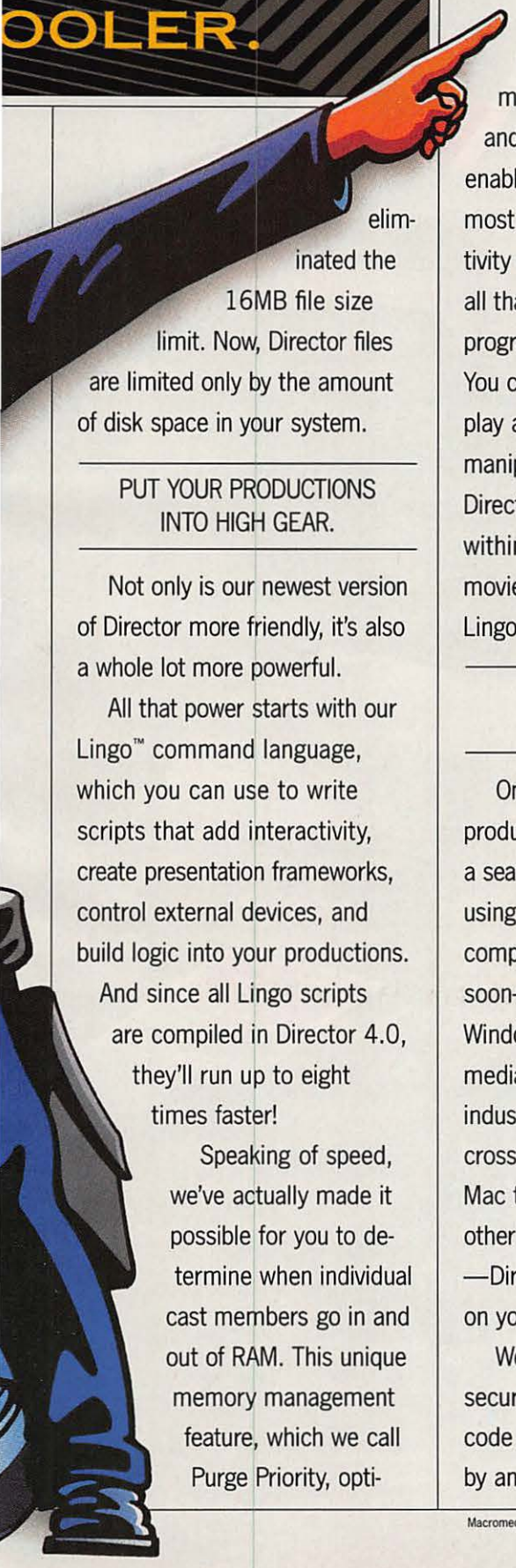
If you've used a previous version of Director®, you'll feel the extraordinary performance of version 4.0 as soon as you start it up. If you're a first-time user, our new and improved interface will enable you to cruise through the program like a pro.

For starters, we've made it easier to organize text, graphics, music, digital video, and sound effects in the Cast, our visual database that now stores up to 32,000 media elements per movie for virtually unlimited flexibility. And you can just as easily synchronize all those Cast members in the Score, which we've upgraded to include 48 separate channels, color layout, and drag & drop editing.

To make sure you can use all this new functionality, we've even



FASTER, OOLER.



elim-
inated the
16MB file size
limit. Now, Director files
are limited only by the amount
of disk space in your system.

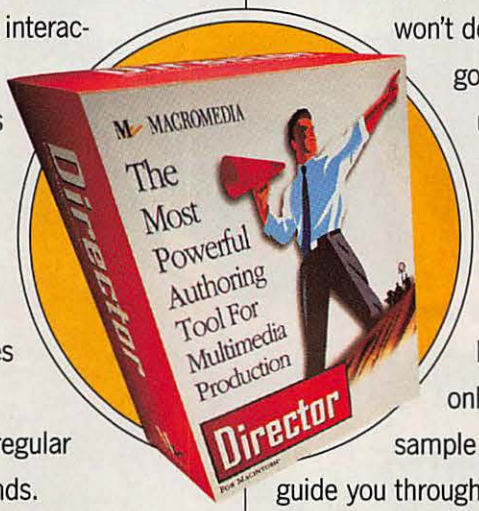
PUT YOUR PRODUCTIONS INTO HIGH GEAR.

Not only is our newest version of Director more friendly, it's also a whole lot more powerful.

All that power starts with our Lingo™ command language, which you can use to write scripts that add interactivity, create presentation frameworks, control external devices, and build logic into your productions. And since all Lingo scripts are compiled in Director 4.0, they'll run up to eight times faster!

Speaking of speed, we've actually made it possible for you to determine when individual cast members go in and out of RAM. This unique memory management feature, which we call Purge Priority, optimizes movie playback to dramatically reduce hard disk and CD-ROM access times.

What's more, our new object-oriented Lingo commands provide reusable code and simplified scripting, enabling you to add even the most complex interactivity without all that tedious programming. You can also play and manipulate Director movies within other movies using regular Lingo commands.



MOTOR FROM MAC TO WINDOWS.

Once you complete any production, Director 4.0 ensures a seamless transition to Windows™, using our new 100% binary-compatible file format with the soon-to-be-released Director for Windows. In other words, Macromedia continues to provide the industry's one-and-only set of cross-platform solutions; from Mac to Windows—plus 3DO and other popular consumer platforms—Director productions will play on your platform of choice.

We've also added high-level security features so that the code you create can't be pirated by anyone else. And that's good to know, since any production developed in Director 4.0 can be distributed royalty free to millions of users worldwide.

LEAN INTO THE (LEARNING) CURVE.

All these impressive features won't do you much good if you can't use them to their potential. That's why we've included new step-by-step tutorials, online help, and sample movies to guide you through the program.

With all that, it won't be long before you discover why the 200 professional developers who tested Director 4.0 found it to be the most exceptional authoring tool they had ever used.

If you're ready to see why, call **1-800-947-7049** for the name of the Macromedia Authorized Reseller nearest you (current Director users should call **1-800-457-1774** for the Version 4.0 Upgrade Kit).

Because you're only as cool as your next production.

MACROMEDIA

TOOLS TO POWER YOUR IDEAS.

Macromedia Director is a registered trademark, and Lingo, Director Player, Macromedia and the Macromedia logo are trademarks of Macromedia, Inc. All other registered marks and trademarks are the property of their respective companies. ©1994 Macromedia, Inc. All rights reserved.

Circle 21 on reader service card



Top dye-sublimation printers, from top to bottom: The Tektronix Phaser 480, the 3M Rainbow, the Tektronix Phaser IISDX, and the SuperMac ProofPositive Full-Page.

MW LAB

BY JIM HEID

PHOTO-REALISTIC COLOR PRINTERS

MACWORLD LAB TESTS 10 DYE-SUBLIMATION PRINTERS

WHEN YOU WANT IMAGES THAT LOOK AS GOOD ON PAPER AS THEY DO ON THE screen, you want a dye-sublimation printer. Dye-sub color printers are those upper-class scribes whose output looks like a photograph—glossy and vivid, with none of the distracting dot patterns that most other color-printing technologies use to simulate continuous-tone images.

Most people who print color presentation materials rely on less-expensive thermal-wax or ink-jet printers. But some applications, including professional publishing, digital photography, and scientific and medical imaging, demand dye-sublimation's photo-realism.

For this roundup, Macworld Lab tested ten printers. Overall, the latest machines produce better output and operate much faster than the eight models I examined last year (see "Dye-Sublimation," *Macworld*, May 1993). They're also less expensive, although prices haven't fallen as dramatically as they did in 1992.

The past year has also brought the first personal dye-sub printer. Fargo Electronics' Primera Color Printer, also sold by NuDesign, sells for less than $1450. The machine has some serious limitations, but that low price tag goes a long way toward offsetting them.

The Primera can also operate as a thermal-wax machine, as can a new high-end printer from Seiko Instruments, the Professional ColorPoint 2 PSF Model 14. This may be a new trend: versatile hybrids that let you choose between dye-sub photo-realism and the lower operating costs of thermal wax.

Of Pigments and Paper

Both thermal-wax and dye-sub printers use heat to transfer pigment from a plastic ribbon to the paper. The ink ribbon contains successive panels of pigment in cyan (C), magenta (M), yellow (Y), and, optionally, black (K). (Many printers accept either three- or four-color ribbons. A three-color ribbon produces blacks that are a composite of CMY. Three-color printing is faster and more economical, but four-color printing produces richer, often sharper blacks.)

A dye-sub printer's print head contains thousands of heating elements, each of which produces different temperatures, allowing the printer to apply varying amounts of pigment. After the printer has applied one color's dots, the print engine draws back the paper for the next pass. Maintaining accurate registration for each pass requires precise paper feeding—one reason these machines are costly.

Thermal-wax printers use opaque wax that, when melted, sits on top of conventional (although extremely smooth) paper. Dye-sub machines use transparent dyes that the print head converts from a solid to a gas in a process called sublimation. The gaseous pigment is absorbed by paper coated with a polyester resin. As it soaks into the polyester, each puff of dye bleeds slightly, causing the dots to merge. These fuzzy-edged dots contribute to a dye-sub printer's continuous-tone talents.

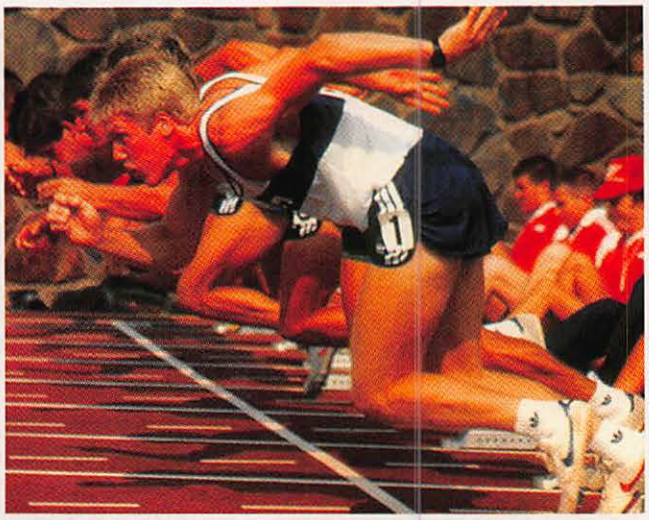
All dye-sub papers are similar, but some printers use a heavier stock that looks and feels like photographic paper.

PHOTOGRAPH BY KEVIN CANDLAND; STOCK PHOTOS: IMAGE BANK / FPG / TONY STONE IMAGES / DUOMO PHOTOGRAPHY

TESTING OUTPUT ACCURACY



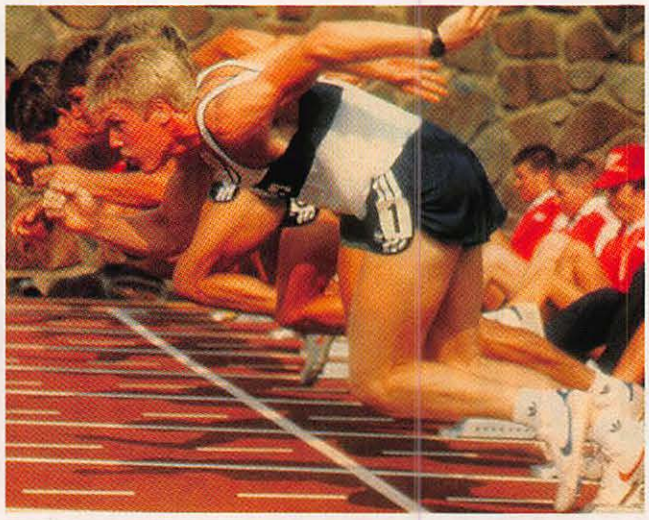
ORIGINAL IMAGE



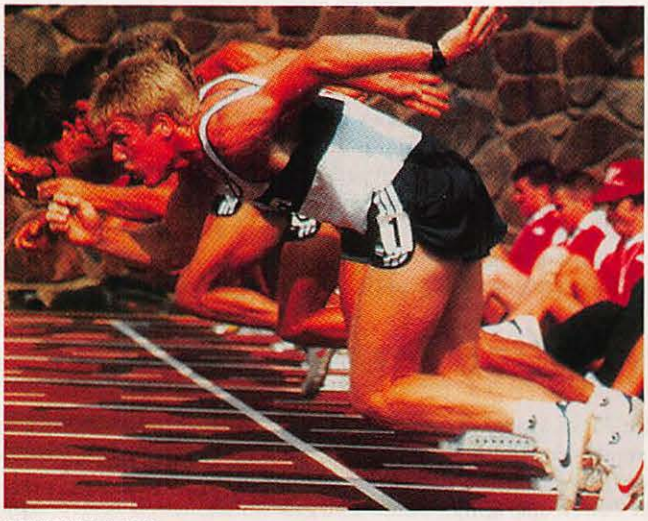
SUPERMAC PROOFPOSITIVE FULL-PAGE



KODAK COLOREASE PS



TEKTRONIX PHASER IISDX



SONY UP-D7000



FARGO PRIMERA

How accurately can dye-sublimation printers reproduce a photo? These images show the broad range of quality variations as compared against the original image (top left). The SuperMac's output (top right) shows extraordinarily sharp details, as seen in the folds in the runner's shorts and the crumpled quality of his shirt. The Kodak ColorEase PS (middle left) shows good color fidelity, in contrast to the yellow cast that throws off colors produced by the Tektronix Phaser IISDX (middle right). Despite its 163-dpi resolution, the Sony (bottom left) does well with this image, though it sometimes suffers from jaggies in fine diagonal lines. The Fargo Primera (bottom right), which uses dither patterns rather than blending colors, suffers from banding and posterizing—both symptoms of uneven transitions between colors.

OUTPUT SAMPLES: DUOMO PHOTOGRAPHY

Of the printers tested, machines that use this high-opacity stock include Kodak's ColorEase PS, Tektronix's Phaser 480, SuperMac's ProofPositive family, 3M's Rainbow, and Sony's UP-D7000.

Year by year, laser printers continue to increase resolution—from 300 dpi to 600 dpi and more. No such evolution is occurring in dye-sublimation, due to the soft-edged fuzziness of dye-sub dots. It can be difficult to differentiate between an image printed by a 163-dpi printer and one produced by a 300-dpi machine, although lower-resolution output can exhibit more banding (jarring color shifts) in areas of subtle color transitions. If you print a great deal of text or line art—which benefit from higher resolution—steer away from machines such as Sony's UP-D7000 and toward the 300-dpi pack (see "Features for Photo-realism").

Quality Comparisons

To judge output quality, we assembled a panel of eight staffers from *Macworld*'s editorial and art departments. Each judge compared unlabeled printouts against photographic prints of the original images, looking at highlights, shadows, color accuracy, and text.

The overall winner: SuperMac's ProofPositive Full-Page. Finishing second—first among tabloid-size printers—was Tektronix's new Phaser 480. Other top finishers included the 3M Rainbow (another tabloid machine) and the SuperMac ProofPositive Two-Page.

That the winner's circle is occupied by SuperMac, Tektronix, and 3M shouldn't come as a shock: all three companies know their color science. More to the point, all three firms' printers provide a larger variety of color-matching and color-management features than do their competitors. SuperMac's printers include Electronics for Imaging's EfiColor processor. The 3M Rainbow also supports EfiColor and provides several 3M-proprietary color systems, including one designed to simulate the characteristics of 3M's photographic Matchprints. The Tektronix machines include Tektronix's TekColor matching schemes, which simulate a variety of printing presses. Tektronix's printers also support the EfiColor, Apple ColorSync, and Kodak ColorSense color-management systems.

A dye-sub printer's blurry dots are ideal for continuous-tone images but give text—especially small sizes—a fuzzy, out-of-focus appearance. Photofine technology from Tektronix handles this problem by adjusting the placement of dots in text and line art to compensate for spreading. It works: the Tektronix Phaser 480 and its smaller sibling, the Phaser IISDX, earned high marks for text output. (Don't confuse this feature with text antialiasing, which involves adding faint pixels to the edges of characters to smooth their jagged edges.) GCC Technologies' ColorTone, which finished eighth in overall output quality, also impressed the judges in the text competition. The printers that did the worst job with text were the two low-resolution machines: Sony's UP-D7000 and Fargo's Primera.

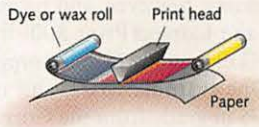
PostScript Variations

Of the ten printers tested, only the Sony and Fargo units do not speak PostScript. They rely on the Mac's QuickDraw graphics language, making their output quality generally unsuitable for printing publishing layouts or illustrations created with programs such as Adobe Illustrator. (Both units work well with Adobe Photoshop and other bitmap-oriented programs, however.)

Within the PostScript clan are several variants, all of which deal with the PostScript interpreter, which deciphers the PostScript-language commands generated by the Mac. Some machines use true Adobe PostScript interpreters, while others use so-called clone interpreters, such as Phoenix Technology's PhoenixPage. Macworld Lab encountered only one

Wax and Dye Printing from One Printer

Dye-sublimation and thermal-wax technologies are similar enough to be combined within a single unit that offers users twice the printing options. Both use a print head with a row of tiny heating elements. Those elements heat spots on rolls of plastic to which colored dye or wax is affixed in alternating blocks of color. Both transfer the colored dye or wax as the paper and color roll contact each other while passing under the print head.

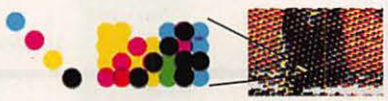


DYE/WAX DIFFERENCES

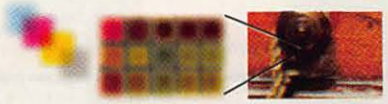
Wax-head elements always heat to the same temperature, transferring a pixel of wax that's always the same density and size. By dithering pixels of different primary colors, these printers create the illusion of many colors in an image. Wax heads create sharply defined pixels that overlap only enough to ensure that no image-degrading gaps form.

Dye-head elements heat to many temperatures—the hotter the element, the greater the density of dye it transfers. Dye heads print primary colors one on top of another to create a full color spectrum. Dye pixels have wide, soft edges and are darker in the center. Dye printers overlap the edges of pixels to compensate for this.

Wax primary colors



Dye primary colors



DYE AND WAX TOGETHER

If a dye head were used to print wax it would create pixels that overlap too much. Printing dye with a wax head would create pixels that are too small, leaving gaps that degrade image quality.



Wax head printing dye



Dye head printing wax

Seiko's Professional ColorPoint 2 PSF Model 14 (which should be available when this appears) prints either wax or dye from the same head by using smaller elements than either conventional wax or dye print heads. The Seiko unit *double steps* the media, placing two smaller pixels side by side. The double-step process offers greater control over pixel size and placement, yielding wax pixels with sharply defined edges and dye pixels with enough overlap to prevent gaps. When printing dye, element temperature varies as in conventional dye printers. When printing wax the temperature is constant.



Double-stepped dye output



Double-stepped wax output

In contrast, Fargo Electronics' inexpensive dual-mode Primera disregards the subtle differences between dye and wax heads and uses a single temperature for both dye and wax. A dither pattern creates multiple colors in dye as well as wax. This yields output inferior to that of the Seiko method.

STANDARDIZING OUTPUT FROM DIFFERENT PRINTERS



COLORSTREAM/DS PLUS ORIGINAL



COLORSTREAM/DS PLUS CORRECTED



RAINBOW CORRECTED

compatibility problem—with RasterOps' CorrectPrint 300i clone. The company supplied a ROM update that fixed the problems. Just before *Macworld* went to press, Tektronix acquired RasterOps' printing business, however, and promptly removed the CorrectPrint 300i from the market. Tektronix will fully support the RasterOps customer base, and now offers a $2995 upgrade from the CorrectPrint 300i to the Phaser IISDX.

Clones are better than ever, but problems could still surface. A few years ago, many clones choked when Adobe released its Multiple Master font technology. Clone developers have since fixed the problem, but if all other factors are equal, buy the printer with a true Adobe interpreter. Besides, all of this year's best machines use one.

Speed Factors

Next to the relative beauty of their output, the next most critical performance factor for these units is speed. For most of our tests, the Sony UP-D7000 page printer and Tektronix Phaser 480 tabloid printer were fastest in their respective categories by a healthy margin (see "How Fast for Great Color?"). They achieved these commendable results via contrasting approaches. The Sony printer combines a low-resolution (163-dpi) engine with a fast SCSI interface and a simple QuickDraw-based driver, while the Tektronix unit relies on a sophisticated controller containing a fast RISC processor and built-in image processing hardware.

A number of other critical factors determine how fast these printers will operate. Most PostScript-interpreter software is built into ROM chips within the printer itself, but the 3M Rainbow and SuperMac's ProofPositive models use an interpreter that lives on a Mac's hard

Features for Photo-realism

Company	Phone	Toll-free Phone	Product	Tested by Macworld Lab	List Price	Standard Ports/ Optional Ports/ All Active	RAM (base model/ maximum)	Resolution (in dpi)
3M	612/733-1110	800/328-1684, ext. 350	Rainbow	●	$20,000 *	SCSI/**/NA	8MB/**	300
GCC Technologies	617/275-5800	800/422-7777	ColorTone	●	$7999	E, L, P, S/T/●	16MB/64MB	300
Codonics	216/243-1198	800/444-1198	NP-1600 Photographic Network Printer	○	$10,495	E, P/none/●	16MB/96MB	300
Fargo Electronics	612/941-9470	800/327-4622	Primera Color Printer	●	$1445	P, S/none/○	32K/32K	203
Kodak	716/253-0740	800/344-0006	ColorEase PS	● ***	$7999	L, P, S/E/●	16MB/16MB	300
Mitsubishi International	914/997-4999	○	Shinko CHC-S746i ColorStream/DS Plus	●	$15,500	L, P, S, SCSI/E/●	54MB/134MB	300
NuDesign	612/832-5622	800/762-3531	NuDesign Color Printer	○	$1298	P, S/none/○	32K/32K	203
Seiko Instruments	408/922-5800	800/873-4561	Professional ColorPoint 2 PSF Model 14	○	$16,495	L, P, S/E, T/●	24MB/136MB	300
Sony	201/930-7796	○	UP-D7000	●	$8995	SCSI/none /NA	7MB/7MB	163
SuperMac Technology	408/541-6100	○	ProofPositive Full-Page	●	$7999 ****	SCSI/**/NA	**/**	300
			ProofPositive Two-Page	●	$14,999 ****	SCSI/**/NA	**/**	300
Tektronix	○	800/547-8949	Phaser IISDX	●	$9995	L, P, S/E, T/●	32MB/64MB	300
			Phaser 480	●	$14,995	L, P, S/E, T/●	32MB/64MB	300

Technical-support ratings are based on a series of calls made to each company by Macworld staffers (posing as customers) to gauge the accessibility, helpfulness, and accuracy of the company's support products Macworld Lab tests. ● = yes; ○ = no; *NA = not applicable. E = Ethernet, L = LocalTalk, P = parallel, S = serial, SCSI = small computer system interface, T = TCP/IP.* * *Vendors' estimated* *** *The XLT 7720 unit, with 11" X 11", L, and A4 paper options, sells for $19,995.* **** *ProofPositive models without PostScript are also available for $6999 (Full-Page) and $12,999 (Two-Page).*



RAINBOW ORIGINAL

Businesses that use more than one color printer sometimes want to obtain a high degree of color fidelity across printers. EfiWorks offers a method of making different printers create similar-looking output. The uncorrected images (far left and immediate left) show substantial color differences, particularly evident in the bold reds, greens, and blues of the runners' uniforms, and in the cinder track. In contrast, the images corrected with EfiWorks (the two central images) look much more similar to each other.

OUTPUT SAMPLES: DUOMO PHOTOGRAPHY

drive. These machines use Adobe's Configurable PostScript Interpreter (CPSI) Level 2. CPSI accepts PostScript commands from the Mac's printer driver, interprets them, and then transmits the bits that represent the page to the printer, which is connected to the Mac's SCSI interface.

This approach has good and bad points. On the plus side, you can improve the printer's performance over time by upgrading the Mac on which CPSI is running—a potentially significant advantage in the color world, where every bit of speed helps. This plus is likely to become even more significant with Adobe's native PowerPC version of CPSI, which should be available by the time you read this.

And like a printer with a built-in interpreter, a CPSI-based printer can be shared on a network. CPSI includes a basic print-server application, but SuperMac also includes a version of the Aldus Color Central utility (sold separately for $3995 by Aldus Prepress Division, 814/238-2120), which provides better control than CPSI over pending print jobs and can decrease printing time and network traffic when printing high-resolution color images.

On the downside, setting aside a Mac to run the CPSI server application adds a few thousand dollars to the printer's effective cost. (SuperMac recommends at least a Quadra 650 with 64MB of memory for best performance.) You can run other programs on the CPSI server, but it may slow unacceptably while processing print jobs. What's more, a Mac's 68040 processor is slower than the RISC processors found in the other PostScript machines tested; the ProofPositive models finished near the bottom in most of Macworld Lab's tests. 3M's Rainbow was generally faster, but still didn't sizzle.

Network Speed Factors

The type of network interface a printer uses also plays a large role in speed, particularly in the color world, where huge image files can cause digital gridlock on LocalTalk networks.

If you primarily plan to print large scanned images, don't even think about attaching a dye-sub printer to a LocalTalk network—not unless you have the patience of Job. You'll need the faster data-transfer rates that Ethernet provides.

To gauge the differences, Macworld Lab tested a Tektronix Phaser IISDX on both a LocalTalk and an EtherTalk network. Performance didn't vary significantly for an Aldus FreeHand document:

Imaging Language	Processor/ Clock Rate	SCSI Port for Font Storage	Number of Fonts	Text Antialiasing	Photoshop Export Module	Paper Sizes	Technical Support
PostScript Level 2 (CPSI)	**	**	35	○	●	A, SA, SB, transparency	acceptable
PhoenixPage Level 2	AM29050/25MHz	yes (includes drive)	35	●	●	A, A4, lgl, SA4	acceptable
Jaws Level 2	Sparc/50MHz	○	35	●	○	A, A4, SA, SA4	not rated
QuickDraw	**	○	0	●	○	A, A4, long A4	excellent
PostScript Level 2	Sparc/ 40MHz	● (includes drive)	35	○	●	A, A4	acceptable
PowerPage Level 2	AM29050/25MHz	●	35	●	●	A, A3, A4, B, SA, SB	unacceptable
QuickDraw	**	○	0	●	○	A, A4, long A4	not rated
PostScript Level 2	i80960CA/33MHz	● (includes drive)	104	○	●	A3, A3 long, B, B long	not rated
QuickDraw	**	○	0	●	optional ($85)	A, A4	not rated (supported through dealers)
PostScript Level 2 (CPSI)	**	**	17	●	●	A, A4, SA, SA4	excellent
PostScript Level 2 (CPSI)	**	**	17	●	●	A, A3, A4, B, SA, SA3, SA4, SB	
PostScript Level 2	AM29000/24MHz	●	39	●	●	A, A4, lgl	excellent
PostScript Level 2	AM29000/24MHz	●	39	●	●	A, A4, B, lgl, SB	

*technicians. Macworld uses a point system, including bonuses and demerits, to derive the final rating. Ratings are for companies, not individual products, and we call only those companies whose street price; no list price available. ** These printers rely on the host Mac to process print jobs and store fonts. Any network interface available on the host Mac is available to the printer.*

object-oriented illustration programs don't ship megabytes of data across a network. Where we did see the EtherTalk advantage was with a 7MB Adobe Photoshop image: a file that took 4.5 minutes to print via EtherTalk took more than 9 minutes to print over LocalTalk.

Only two of the PostScript printers tested include a built-in EtherTalk interface: GCC's ColorTone and Tektronix's Phaser IISDX. EtherTalk is an extra-cost option for the Kodak ColorEase PS ($495) and the Tektronix Phaser 480 ($695). The 3M Rainbow and SuperMac ProofPositive machines connect to the host Mac via SCSI; to get the best performance when using these printers on a network, you should run CPSI on an EtherTalk-equipped Mac. EtherTalk is also a $700 option for the Seiko Instruments Professional ColorPoint 2 PSF Model 14.

Connecting a hard drive to a PostScript printer is another way to improve performance and decrease network traffic. The hard drive can store fonts that would otherwise have to be downloaded over the network. GCC's ColorTone and Kodak's ColorEase PS each contain a hard drive, as will Seiko's Professional ColorPoint 2 PSF Model 14. The remaining embedded-PostScript machines have a SCSI port for an external drive.

With the 3M Rainbow and SuperMac ProofPositive models, all fonts are stored on the CPSI Mac's hard drive. Version 2.0 of SuperMac's ProofPositive family, which should be available by the time you read this, will also accept a dedicated hard drive that will hold the bitmap of the most recently printed job. This feature will enable you to reprint a document without having CPSI reprocess it—an important time-saver.

If you anticipate a lot of printing within Adobe Photoshop, look for a printer that includes a Photoshop export module, which bypasses the Mac's PostScript driver and sends the image's RGB or CMYK data directly to the printer. In our tests the Tektronix Phaser 480 needed only about three-fourths as much time to print using the module as it needed using the driver. Note, though, that quality may suffer if you print images whose resolution is greater than 300 dpi. Among all the export modules we tested, only the 3M Rainbow's was able to scale down a 400-dpi image to 300 dpi without introducing distortion. Export modules come with all the machines tested except Fargo's Primera and Sony's UP-D7000 (Sony sells an optional export module for $85).

Combination Platters

Thanks to that polyester-coated paper, dye-sub output is the costliest in the color world. Letter-size output costs roughly $2 to $5 per page, while tabloid-size pages cost about $7. Thermal-wax output costs less than a dollar for a letter-size page, and about a buck for a tabloid-size one.

This is one reason the dual-media approach of the Fargo Primera and the Seiko Professional ColorPoint 2 PSF Model 14 is appealing: you can choose the imaging technique appropriate to the document's quality requirements (see "Wax and Dye Printing from One Printer"). In the graphics world, it's routine to print numerous tests while refining a lay-

How Fast for Great Color?

Best result in each test. Printers are listed by category in decreasing order of overall speed. Times are in seconds. Shorter bars are better.

	PHOTOSHOP-RGB		PHOTOSHOP-CMYK		
	Using Plug-in Print speed for a 7MB, 200-dpi, RGB Photoshop file using plug-in export modules supplied with the printers.	**Using Driver** Print speed for a 7MB, 200-dpi, RGB Photoshop file using the printer's driver.	**Using Plug-in** Print speed for a 9.35MB, 200-dpi, CMYK Photoshop file using plug-in modules supplied with the printers.	**Using Driver** Print speed for a 9.35MB, 200-dpi, CMYK Photoshop file using the printer's driver.	**Page Layout** Print speed for a two-page QuarkXPress 3.2 document (one page for tabloid printers) with three fonts and a 10MB graphic.
Page Printer; I/O Port Used					
Sony UP-D7000; SCSI	211	191	NA	207	442
Tektronix Phaser IISDX; ET	269	412	293	381	603
Kodak ColorEase PS; ET	321	623	352	474	679
SuperMac ProofPositive Full-Page A,B; ET	C	689	C	632	964
SuperMac ProofPositive Full-Page A; SCSI	280	743	362	671	995
GCC Technologies ColorTone; ET	547	805	543	656	1075
Fargo Electronics Primera Color Printer; S	NA	949	NA	1051	2031
Tabloid Printer; I/O Port Used					
Tektronix Phaser 480 D; ET	297	426	310	405	464
3M Rainbow B, E; ET	F	708	C	584	732
3M Rainbow E; SCSI	C	847 G	466	458	960 G
SuperMac ProofPositive Two-Page A; ET	C	851	C	794	1654
SuperMac ProofPositive Two-Page A, B; SCSI	385	858	491	828	1667 G
Mitsubishi ColorStream/DS Plus; ET	788 H	1683 H	I	1116 H	4978

ET = EtherTalk; S = serial.

BEHIND OUR TESTS

Macworld Lab gauged printer speed with a variety of documents and techniques, each designed to test performance from a different perspective.

The Photoshop tests measured the printer's ability to handle large bitmapped images as well as network interface performance. We ran both RGB and CMYK tests using the Mac's PostScript printer driver and using the Photoshop Export modules that accompany most of the tested printers. The page-layout test used a two-page QuarkXPress document containing three downloadable fonts with different sizes on one page, and a 10MB graphic on the second page. This test gave the printers a good overall workout and demonstrated how well each machine handles typical publishing jobs.

The Aldus FreeHand document tested the performance of a PostScript printer's controller. The MacDraw Pro document also tested controller processing performance.

To judge output quality, eight staffers from *Macworld's* editorial and art departments compared four different unidentified printouts against photographic prints of the original images, looking at highlights, shadows, color accuracy, and text.—**Macworld Lab testing supervised by Mark Hurlow**

out's design and typography. Printing these using the thermal-wax ribbon and paper can cut costs dramatically.

In Seiko's Professional ColorPoint 2 PSF Model 14, a sensor determines whether you've installed a thermal-wax or dye-sub ribbon and media and adjusts the print-head temperature and paper-transport speed accordingly. The printer, expected to sell for $16,495, can print tabloid-size pages with bleeds, and it packs an impressive list of features, including a built-in hard drive containing a whopping 104 Adobe fonts. The Model 14 didn't ship in time to be formally tested for this article.

Seiko offers an array of unique thermal-wax media options, including iron-on fabric transfers and static-cling plastic for window signs. This means designers can do small runs of promotional doodads on the same printer they use to produce proofs.

Picking a Printer

What are the top choices this time around? For prepress proofing of tabloid-size jobs, the 3M Rainbow and Tektronix Phaser 480 share first place. Both offer outstanding output and a wide range of color-matching and color-proofing options. The Rainbow is the more complete proofing device; unlike the Phaser 480, it lets you proof traps and overprints. (SuperMac says this capability will also be available in version 2.0 of the ProofPositive line, which should ship by the time you read this.)

The Rainbow costs several thousand dollars more than the Phaser 480, however, and you'll also need to all but dedicate a Mac to running the Rainbow's PostScript interpreter. Besides costing less and being far faster, the Phaser 480 prints text significantly better than does the Rainbow.

If you buy the base-model (32MB) Phaser 480, you'll need to add at least 16MB to the printer to use a four-color ink ribbon. (Tektronix omitted the extra RAM in order to cut the printer's cost for the scientific- and medical-imaging markets, which don't require CMYK printing.) Tektronix's price for the 16MB upgrade is $1595, but the printer uses standard SIMMs, so you might be able to do better. A 32MB upgrade retails for $3190 and provides an overall performance improvement of roughly 20 percent, according to Tektronix. The Phaser 480 tested by Macworld Lab included this 32MB upgrade as well as the optional ($695) EtherTalk interface, bringing the price of the test unit to $18,880.

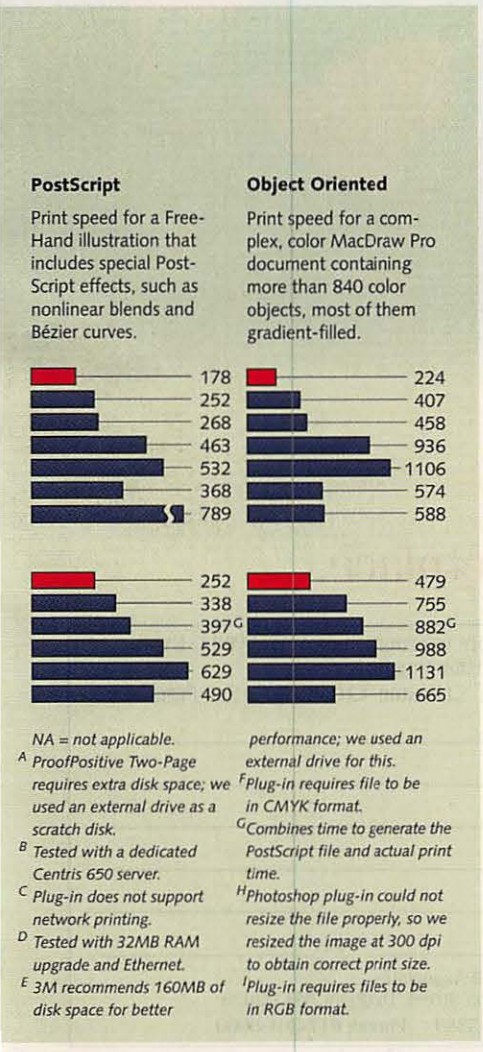
For letter-size proofing applications, SuperMac's ProofPositive Full-Page takes first place. But keep in mind that for the most critical publishing jobs, there's still no substitute for a photographic proof. Because a proof is made from the same color-separation films that are later used to burn the printing plates, it can show flaws those films might have, such as moiré patterns caused by halftoning.

As for the rest, for the second straight year the $8995 Sony UP-D7000 was the fastest dye-sub printer we tested. Its QuickDraw driver and 163-dpi resolution make it unsuitable for text-oriented jobs, but it is a good choice for electronic photography and digital video applications. The $7999 Kodak ColorEase PS also performed well, although its color accuracy was uneven. The $7999 GCC ColorTone does a better job, although it's slower and its stock isn't as hefty and glossy as Kodak's. The ColorTone also earns points for including an EtherTalk interface, for which Kodak charges extra.

Then there's the $1445 Fargo Primera. It's certainly not in the same league as the rest of the printers tested (although our quality judges ranked its output as superior to Sony's). Technically, the Primera doesn't even produce continuous-tone images: it actually uses a minute but still-discernible dither pattern.

Still, the Primera's output is impressive and more photo-realistic than that of any mainstream thermal-wax or ink-jet machines. The Primera and its repackaged twin, NuDesign's NuDesign Color Printer, are solid, if slow, choices for low-budget electronic photography or digital-video applications. **m**

Contributing editor and *Working Smart* columnist JIM HEID teaches electronic publishing and typography. His latest books are *Macworld Complete Mac Handbook Plus CD* (1993) and *Macworld Word 6 Companion* (1994), both published by IDG Books Worldwide.



NA = not applicable.

[A] ProofPositive Two-Page requires extra disk space; we used an external drive as a scratch disk.

[B] Tested with a dedicated Centris 650 server.

[C] Plug-in does not support network printing.

[D] Tested with 32MB RAM upgrade and Ethernet.

[E] 3M recommends 160MB of disk space for better performance; we used an external drive for this.

[F] Plug-in requires file to be in CMYK format.

[G] Combines time to generate the PostScript file and actual print time.

[H] Photoshop plug-in could not resize the file properly, so we resized the image at 300 dpi to obtain correct print size.

[I] Plug-in requires files to be in RGB format.

DYE-SUBLIMATION PRINTERS

MW EDITORS' CHOICE

Photo-realistic printers offer a broad range of high-end–publishing and prepress features, and no single printer is best for every office. We selected the top machines for every major category.

Prepress Proofing—Tabloid Size

Phaser 480 The fastest tabloid-size printer tested also offers the best text quality. Tektronix's technical support was also excellent. You'll need to expand the base model's 32MB of RAM to at least 48MB to print with a CMYK ribbon, however. **Company:** Tektronix. **List price:** $14,995. **Price as tested:** $18,880.

Rainbow It's costlier than the Phaser 480 and requires a Mac to run its PostScript interpreter, but it's the most complete tabloid proofer—and the only printer tested whose Photoshop export module correctly scales down images. **Company:** 3M. **Estimated street price:** $20,000.

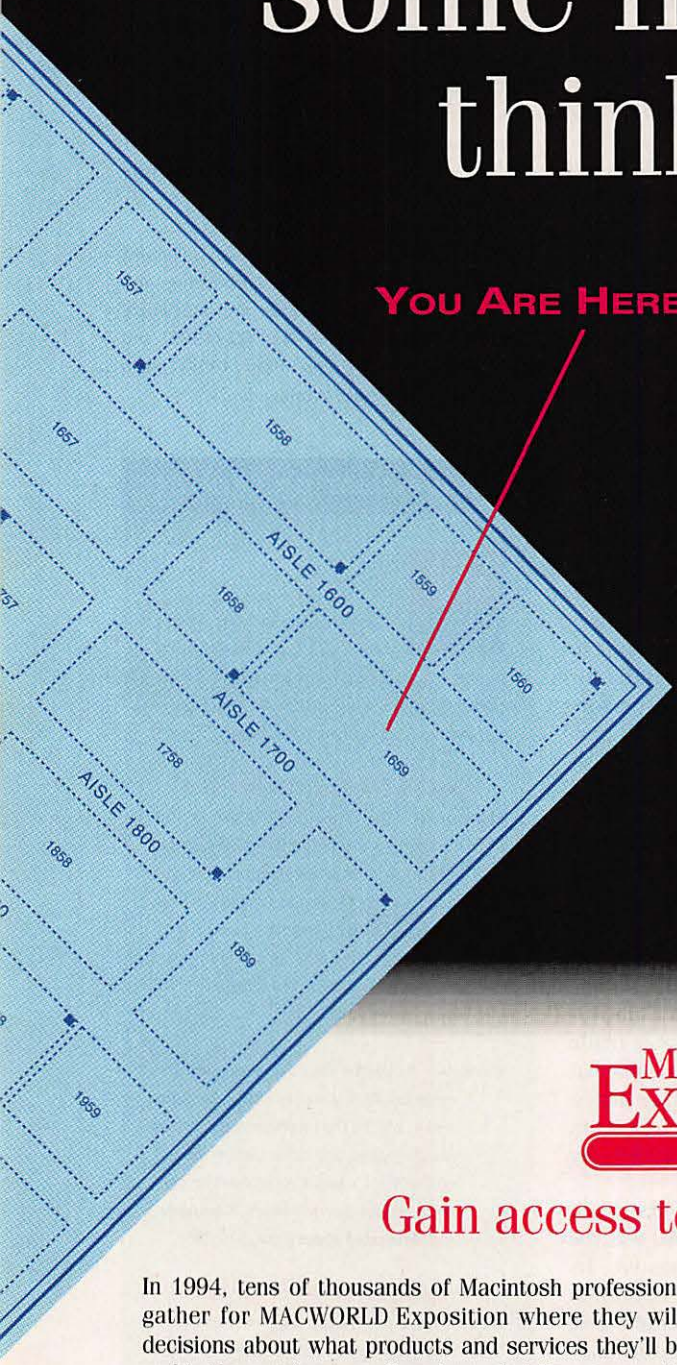
Prepress Proofing—Letter Size

ProofPositive Full-Page This cost-effective machine's overall output quality earned first place among all the printers tested, although its text lacked the sharpness of Tektronix's Phaser IISDX. **Company:** SuperMac. **List price:** $7999.

General Publishing and Business

Phaser IISDX The latest version of the venerable Phaser II is faster than its predecessors. **Company:** Tektronix. **List price:** $9995.

If you think you just get some floor space, think again.





MACWORLD EXPOSITION

Gain access to a world marketplace.

In 1994, tens of thousands of Macintosh professionals will gather for MACWORLD Exposition where they will make decisions about what products and services they'll buy now and in the coming year. Based on what they see and learn at MACWORLD Expo, they'll decide how to expand their system to expand their world.

MACWORLD Expo/Boston – August 2-5, 1994
MACWORLD Expo/Canada – October 18-20, 1994
MACWORLD Expo/San Francisco – January 4-7, 1995

Reserve your booth space today for MACWORLD Exposition and see how some floor space can turn the world into your marketplace.

Please send me more information on MACWORLD Expo.
I am interested in exhibiting in:
❑ Washington, D.C. ❑ Boston ❑ Canada ❑ San Francisco

Name_____

Title_____

Company_____

Address_____

City/State/Zip_____

Phone_____ Fax_____

Mail to: Mitch Hall Associates
260 Milton Street, Dedham, MA 02026
Or Fax to: 617-361-3389 Phone: 617-361-8000

Desktop Color Proofing.

FANTASY or REALITY?





If it seems like obtaining accurate desktop color proofing is just a fantasy, then step into reality with NewGen's Chromax Color Printer. NewGen has developed this full-bleed, tabloid size, dye-sublimation color printer to break through barriers that previously existed only as a fantasy. Accurate color, true photographic quality and unmatched performance can now be achieved at a price that seems like a figment of your imagination!

Chromax produces uniform color that is unattainable from other dye-sublimation printers. Streaking, banding and ghosting are virtually non-existent which allows you to rely on a Chromax proof for design, proofing and pre-press applications. Furthermore, support for the EFIColor™ Color Management System assures color reliability. In addition, PostScript™ Level 2 compatibility, RISC-based performance and networking capability are second to none.

If you are tired of fantasizing about accurate color proofing, and want to move up to reality, visit your NewGen dealer today, or call **(800) 756-0556** for more information.

newgen **NewGen Systems Corporation**

17550 Newhope Street, Fountain Valley, CA 92708
TEL: 714/641-8600 FAX: 714/641-2800

EFICOLOR™

© Copyright 1994. All rights reserved. NewGen is a registered trademark of NewGen Systems Corporation. All other trademarks are property of their respective owners.

Circle 74 on reader service card

Circle 75 on reader service card

Macworld Lab tests virus software and survives

Virus Killers

BY BRUCE SCHNEIER

Macintosh users ignore computer viruses at their peril. Viruses can cause irreparable damage to the system or destroy megabytes of data. Fortunately, unlike their biological namesakes, computer viruses are relatively easy and painless to control. With a leading virus-protection software program, it takes only a few minutes a day to remain virus-free.

Macworld Lab tested four antiviral products—the freeware application Disinfectant, Central Point Software's MacTools ($149.95), Symantec's Symantec AntiVirus for Macintosh (SAM, $99), and Virex ($99.95) from Datawatch—against every Macintosh virus known at the time of testing, 52 in all. We also looked at each product's features and measured how fast the programs detected viruses.

We found that all four programs effectively combat the most important and prevalent viruses, but not all could handle certain strains. And the products varied widely in how fast they operate, with Virex blazing a new performance standard for virus detection. At the speed of Virex, dealing with viruses becomes a virtually painless exercise.

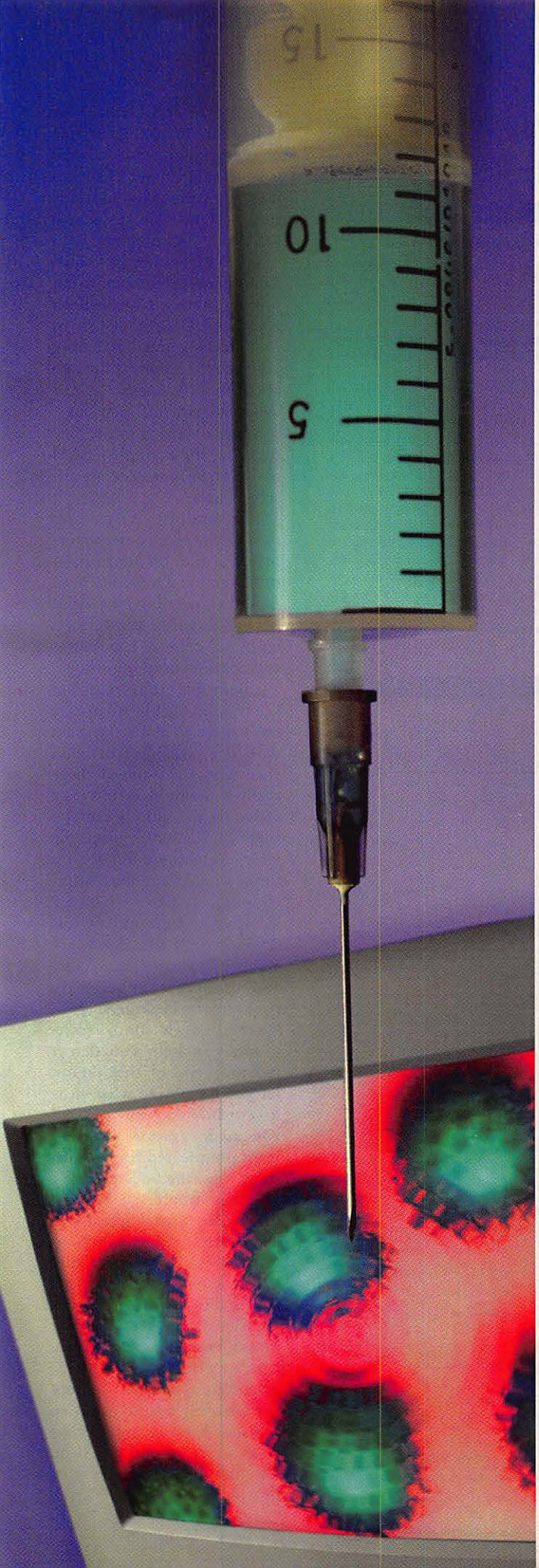
Know the Enemy

To understand the relative quality of these products, first take a step back to consider your insidious opponent: computer viruses are software programs. But unlike normal software, viruses operate unseen, on their own initiative, often hiding inside other programs and running when those programs are launched.

Many Macintosh viruses are benign; they simply spread from computer to computer without doing damage. But others erase files and cause other mayhem. Viruses can be spooky because they rarely put up dialog boxes or prompt users for input—once your machine is infected, unseen damage can go on for some time until you notice a problem. By then it may be too late to correct. Other viruses leave files or applications untouched, but cause system incompatibilities that lead to crashes and other problems.

Computer viruses spread by modifying another program to include an executable, and possibly altered, copy of the virus. They enter your machine on removable disks, files downloaded from bulletin boards, files shared on servers, and sometimes even shrink-wrapped software or blank preformatted disks.

STAN MUSILEK/VIRUS IMAGE BY PHOTO RESEARCHERS



MW LAB

Typically, the virus code executes when a user launches the program the virus is attached to. The virus then attempts to infect other programs, thereby reproducing itself. A virus may start reproducing right away, or it may lie dormant until it is triggered by some event (the computer's clock registering Friday the 13th, for example). Some viruses duplicate themselves when you open an infected file. Others infect the system and infect other volumes when you access them.

Performance Variations

All four antiviral programs are easy to install and use. Each consists of an INIT and an application. The SAM interface is slightly more complex—and therefore takes a bit more concentration—than the other products, but this shouldn't cause problems for most users. These are relatively simple applications, and each user interface is relatively easy to use.

All four products did a good job destroying the known viruses that they are designed to detect. Detection is relatively easy because each virus leaves a distinct signature—a string of bytes that uniquely identifies the viral code. Antivirus software merely recognizes these signatures.

When any of these products discovers a known virus, it informs you of the infection and asks if you want the virus removed. Say yes. The program then removes the virus and, to the best of its ability, restores your system to its previral state. We found that once any of the products detects a virus, eradication is 100 percent effective.

Differences between the products emerge, however, in what viruses they can detect (see "Antivirus Performance Factors"). All four detected Macintosh System viruses, the most common and dangerous strain. Only SAM and Virex detected HyperCard viruses, however, so if you routinely use HyperCard those two products represent your only viable options. Disinfectant cannot detect Trojan horses—stand-alone applications that must be launched in order to be activated, and that are similar to viruses in the damage they can cause.

Every virus program can scan files compressed with all driver-level compression products, including Fifth Generation Systems' AutoDoubler and Aladdin Systems' StuffIt SpaceSaver. When it comes to archiving programs, the virus-detection products are less effective. SAM scans archives compressed with both Aladdin Systems' StuffIt series and Compact Pro; MacTools scans Compact Pro archives but not StuffIt archives; and neither Virex nor Disinfectant scans compressed archives. Such deficiencies make it imperative to use other program features regularly to catch viruses that may be released when a compressed file is expanded.

Speed is a critical and clear-cut differentiating factor. Most people scan for viruses with diligent regularity only if the process is convenient and quick. All four products are convenient, but only Virex, with its impressive SpeedScan, is fast. Scanning operations that take SAM upwards of 5 minutes take Virex less than 30 seconds to complete. With Virex it is reasonable to scan your entire hard disk every time you boot up your Macintosh.

Unknown Viruses

Detecting new or undocumented viruses is much harder. Since an antivirus program does not have unknown viruses' signatures to go on, it cannot scan for those signa-

Antivirus Performance Factors

SCANNING SPEEDS

Best result in each test.

Times are in seconds. Products are ranked in decreasing order of overall performance.

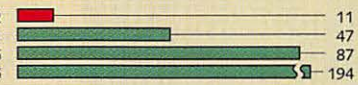
Launched from Floppy Disk

Time to scan hard drive containing 5 apps and 985 files totaling 88.5MB, after launch from a floppy disk.



Launched from Hard Drive

Time to scan hard drive containing 5 apps and 985 files totaling 88.5MB, after launch from the hard drive.



BEHIND OUR TESTS

Antivirus software faces two critical performance questions: How comprehensive is the software's detection filter, and how fast does the product scan your drive? A third factor—how fast the product eradicates the virus—is fairly constant across the four applications tested.

We tested detection speed two ways—launching the antivirus application from the hard drive as a user might do during routine maintenance, and launching from a floppy, as would be necessary before installing the antivirus software or if the System Folder on the hard drive has been infected and disabled. The speed tests were done on a Centris 650 equipped with 8MB of RAM and a 230MB hard drive, using System 7.1 with AppleTalk off and 32-bit addressing on. The drive contained 88.5MB of information, including 985 files and 5 business and graphics applications. Because this test measured scanning speed only, neither applications nor files were infected.

To test the detection filter, Macworld Lab obtained 52 strains of Macintosh viruses, Trojan horses, and HyperCard viruses. We scanned this set with each product. Not every product could detect every virus, but every product successfully eradicated the viruses it could detect.—**Macworld Lab testing supervised by Matthew Clark**

VIRUS-DETECTION SCOREBOARD

✓ = Detects and eradicates

Virus Family (number of strains)	Virus Type	Virus Effects	SAM	MacTools	Disinfectant	Virex
ANTI (3)	virus	A, C, G, H	✓	✓	✓	✓
CDEF (1)	virus	A, H	✓	✓	✓	✓
Code 252 (3)	virus	A, D, F, G	✓	✓	✓	✓
Code 1 (1)	virus	A, D, F, G	✓	✓	✓	✓
Dukakis [HC] (1)	HyperCard virus	A, E	✓	*	*	✓
Frankie (1)	virus	A, C, G	✓	✓	✓	✓
INIT 17 (1)	virus	A, D, F, G	✓	✓	✓	✓
INIT 1984 (1)	virus	B, F	✓	✓	✓	✓
INIT 29 (1)	virus	A, C, D, E, F, G, H	✓	✓	✓	✓
INIT-M (3)	virus	B, E, F, G, H	✓	✓	✓	✓
MacMag (1)	virus	A, D, F	✓	✓	✓	✓
MBDF (3)	virus	A, F, G, H	✓	✓	✓	✓
MDEF (3)	virus	A, E, F, G, H	✓	✓	✓	✓
MDEF (strain D) (1)	virus	A, C, G	✓	✓	✓	✓
MerryXmas [HC] (1)	HyperCard virus	A, E	✓	*	*	✓
nVIR (8)	virus	A, D, F, G	✓	✓	✓	✓
Scores (1)	virus	A, F, G, H	✓	✓	✓	✓
CPro (1)	Trojan horse	B	✓	✓	*	✓
Mosaic/FontFinder (2)	Trojan horse	B	✓	*	*	✓
Steroid (1)	Trojan horse	B	✓	✓	*	✓
Tetricycle [TH] (1)	Trojan horse/virus	B	✓	✓	**	✓
Virus Info (1)	Trojan horse	B	✓	✓	*	✓
China Talk (1)	Trojan horse	B	✓	✓	*	✓
T4 (5)	virus	B, F, G, H	✓	✓	✓	✓
WDEF (2)	virus	A, H	✓	✓	✓	✓
ZUC (2)	virus	A, C, D, G	✓	✓	✓	✓
3 Tunes [HC] (2)	HyperCard virus	A, E	***	*	*	✓

A = May cause system errors and crashes.
B = Damages or destroys system or application files.
C = Infects without application launch.
D = Nondamaging effects, such as system beeps, appearance of funny phrases, or bouncing cursor.
E = Infects or modifies document files.
F = Infects or modifies system files.
G = Infects or modifies applications.
H = Infects desktop files and/or Finder.

**Either documentation or vendor has acknowledged that this product will not find this type of virus. **This Trojan horse was not detected, but it releases a virus, MBDF A, which was detected. ***Detected one of two strains; second strain should be detected by later versions of SAM.*

tures. SAM and Gatekeeper (a freeware program available on most online services, often used to supplement Disinfectant) continuously monitor the System for suspicious activity. (Disinfectant can monitor for activity by known viruses and their variants but not by new viruses.) Both SAM and Gatekeeper sit in the background, watching your other applications go about their business. When a virus danger signal pops up—a program writing to the System file, for example—SAM and Gatekeeper post an on-screen alert.

In contrast, Virex uses *checksums*—electronic fingerprints of files on your disk—to determine if a file has been modified, possibly by a virus. MacTools goes a step further, employing both checksums and continuous monitoring.

Both approaches work but can be more trouble than they are worth. When a program detects a possible virus, you then have to decide if there really is an infection or if it's a false alarm. (For example, some applications legitimately alter the System Folder on installation, triggering a suspicious activity alarm.) In general, you have little to base this decision on. False alarms are annoying to experienced users and can cause unnecessary panic among beginners.

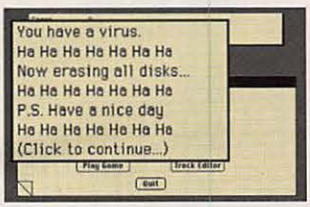
And while both techniques can help you detect unknown viruses, they do not let you determine what virus it is or how to remove it. All you can do is restore your files from preinfected backups. In short, these methods are rarely worth the trouble.

While Intel-based–PC users face many hundreds of viruses and new ones all the time, the odds of a Macintosh user finding an unknown virus are slim. Partly because Macintosh viruses are relatively hard to write (just like legitimate Mac applications), there are relatively few known Mac viruses. Stick to detecting known viruses and you'll be fine more than 99 percent of the time.

Virus-Fighting Options

	Disinfectant 3.3	MacTools 3	Symantec AntiVirus for Macintosh 3.5	Virex 5
Price	freeware*	$149.95	$99	$99.95
Company	NA	Central Point Software	Symantec	Datawatch
Phone	NA	503/690-8088	503/334-6054	919/549-0711
Toll-free phone	NA	800/964-6896	800/441-7234	○
Tested by Macworld Lab	●	●	●	●
Stops infected applications from launching	●	●	●	●
Automatically scans start-up disk (at start-up/at shutdown)	○/○	●/●	●/●	●/●
May prevent unknown viruses	○	●	●	●
Automatically scans floppies and removable media	○	●	●	●
Scans and ejects multiple floppies	●	○	●	●
Contains emergency disk or instructions to create one**	●	●	●	●
Notifies users of new viruses	○	●	●	●
Scans compressed files	○***	Compact Pro***	StuffIt series, Compact Pro***	***

● = yes; ○ = no; NA = not applicable. *Available on the Internet, CompuServe, GEnie, and America Online. **For using to recover from System Folder infections.
***All products scan driver-level compression products.



Panic Attack Some viruses may damage your psyche more than your computer. The message above is a ruse. This virus, a strain of Code 252, didn't actually erase any disks but did cause enough damage to the System file to require reinstallation.

Updating Software Is Vital

Still, the inventory of known Mac viruses is growing, if slowly. For example, after Macworld Lab completed its testing, we learned of two new viruses, Init 9403 and Init 29-B. Init 9403, a highly destructive virus that spreads only through Italian versions of Mac system software, attempts to erase all drives connected to the infected system. This example shows why it is vital that you keep your antiviral software up-to-date. New versions of antiviral software are released days (sometimes even hours) after a new virus is discovered. (All products should have long since added Init 9403 and Init 29-B to their roster by the time you read this.) If you're a registered user of one of the commercial programs, you're mailed a postcard that gives you the signature of the new virus; you have to enter that string into the program.

These signature strings are also available on America Online, on other services in some cases—CompuServe and AppleLink for SAM, and CompuServe for MacTools—and from the companies' own bulletin board services. All three companies can also, for a small fee, send updated software disks to registered users. Disinfectant users can get updated versions on network servers on the Internet, CompuServe, GEnie, and America Online.

SAM is the best antiviral program for network distribution. It allows a central network administrator to automatically install or update SAM on every machine on an AppleTalk network. MacTools requires that each user on a network download the new version from a server, but MacTools has a reporting feature so that an administrator can see which users have updated their antiviral software and which have not. Virex can be installed across a network. It currently has no network updating features, though Datawatch plans to add them in the next version. Disinfectant has no networking features.

Be Alert

Whichever product you select, you'll be safer if you employ some simple preventive antivirus techniques:

- Keep original software on locked master floppies.
- Don't install software on one computer from another computer.
- Make periodic backups of your hard drive, and lock your backup disks. Run your antiviral software before each backup to make certain the backups do not become infected.
- Check all new software—commercial software, shareware, and freeware—for possible infections. Despite the best efforts of vendors and sysops, viruses sometimes slip through.
- Be on the lookout for common symptoms of a virus infection—frequent system bombs for which no explanation can be found; mysteriously malfunctioning applications; disks that are damaged and cannot be accessed; unexplained printing difficulties; distortions in pull-down menus; and windows that do not open, close, or zoom correctly.

Fortunately, you shouldn't run into such problems too often—at least not as a result of viral infections. The Macintosh virus threat has diminished, both in the number of new viruses discovered and the number of reported incidents of infection. This is mostly due to the excellent quality of these four antiviral packages. So viruses can be an annoyance, or even an occasional problem. But if you use a little common sense, they should never become a computing nightmare. **m**

BRUCE SCHNEIER is a computer security consultant and the author of *Protect Your Macintosh* (Peachpit Press, 1994).

VIRUS KILLERS

MW EDITORS' CHOICE

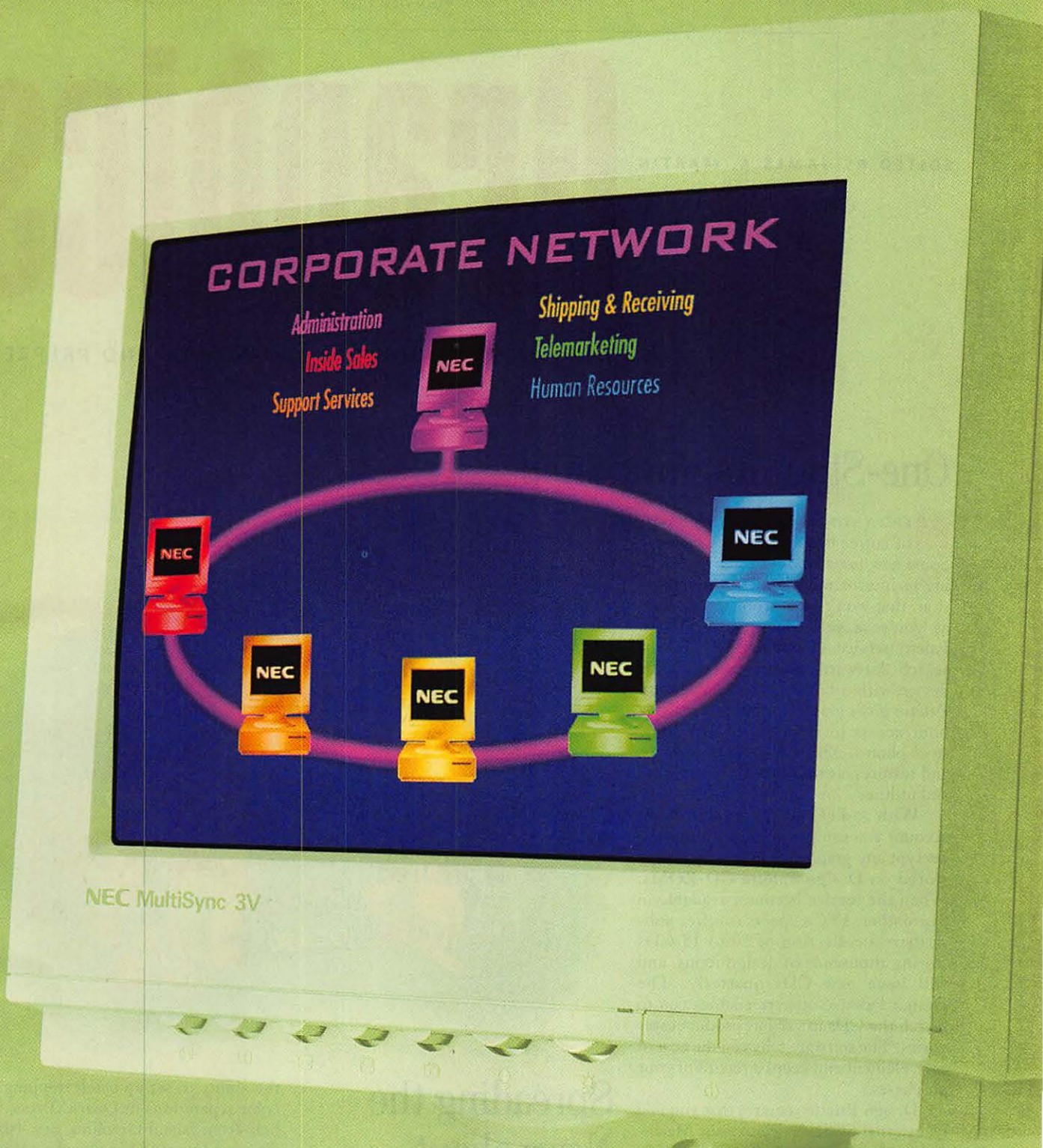
All four antiviral programs operate reliably, but substantial differences in price and speed made the selection easy.

Virex Virex's SpeedScan makes it the fastest antiviral software by a wide margin. Combine that with a detection mechanism that catches every known virus and a price comparable to that of other commercial products, and you have a program that's hard to beat. **Company:** Datawatch. **List price:** $99.95.

Disinfectant Free software is appealing, especially a product as well written as this one. Unless you are concerned about HyperCard viruses or Trojan horses, or need a program with networking capabilities, Disinfectant is a great choice. **Company:** Not applicable. **List price:** Free from online services.

Ten hours per day.
One hundred and thirty words per minute.





Introducing the MultiSync® 3V.
The affordable solution for those who make your business run.

They're the people you count on to get the job done. And from secretaries to shipping, they need all the help you can give them. Luckily, the 15"* MultiSync® 3V monitor was designed to work for them. It works with the latest Macs and gives you the great colors and sharp display you'd expect from an NEC MultiSync monitor. Plus, it supports multiple resolutions and lets you switch between them with NEC's DPI-on-the-Fly® software. So you can choose the resolution that's best for your application. You also get a monitor that's MPR II compliant and has a 3-year limited warranty. It's more than you'd expect at such a great price. But then again, you're probably used to getting the most for your money. Questions? Call 1-800-NEC-INFO. Or, for info via fax, call 1-800-366-0476 and request our Mac products catalog #4. **The easiest monitors to live with for hours and hours: Ours.** NEC

*15" CRT yields 13.8" viewable screen area. Optional cable adapter, required for Macintosh connection, available free from NEC. MultiSync is a registered trademark of NEC Technologies, Inc. The Energy Star emblem does not represent EPA endorsement of any product or service. © 1994 NEC Technologies, Inc.

Circle 28 on reader service card

EDITED BY JAMES A. MARTIN

Graphics

THE LATEST IN DESIGN, PUBLISHING, AND PREPRESS

One-Stop Graphics Shop

NEED A STOCK BACKGROUND IMAGE of coffee beans right this minute? Some new fonts before sunrise? According to International Typeface Corporation, that won't be a problem—as long as you're a subscriber to its Design Palette service. Combining CD-ROMs, search software, and a special SCSI device with a built-in modem, Design Palette gives graphic artists instant, 24-hour access to a variety of electronic stock photos, clip art, fonts, backgrounds, and textures, as well as multimedia tools and utilities.

With an ITC Design Palette credit account you can preview, purchase, and decrypt any graphical element or utility stored on Design Palette CD-ROMs. When the service becomes available in September, ITC expects to offer subscribers a collection of 10 to 15 CDs storing thousands of design items, and will issue new CDs quarterly. The Design Palette software enables you to search the CDs in various product categories. The software tells you the cost of each element and keeps a record of your purchases.

Design Palette requires that you add its external SCSI device to your Macintosh and connect its customized, 2400-bps modem to a telephone line. The SCSI device includes the hardware necessary to decrypt the items stored on the CDs. ITC's computers will dial up each subscriber's SCSI-device modem daily (in the wee hours) and download invoicing information based on that day's purchases.

There will be a small, one-time service fee (around $30) and a required monthly expense minimum, which wasn't set at press time but could be $100 to $200. At press time, ITC would not announce the names of any specific content providers for Design Palette. ITC, 212/371-0699.—J.A.M.



ANDREW FAULKNER

Spreading the News about Trapping

WHETHER YOU USE QUARKXPress or Aldus PageMaker, the process of trapping promises to become easier, thanks to the updated version of Island Graphics Corporation's IslandTrapper, a Quark XTension, and a new Aldus PageMaker Addition.

IslandTrapper 2.0, scheduled to be available in both native PowerPC and 680X0 versions by late June, now offers the ability to set up batch trapping and color separations in QuarkXPress, with help from Island Graphics' new IslandTrapper Quark XTension. You use the XTension to set trapping and color-separation parameters within XPress for all objects (including EPS files) on each page of a document, then send the document to IslandTrapper 2.0. The program performs all necessary trapping functions and color separations based on the parameters set in QuarkXPress. (Previous versions of IslandTrapper did not offer color-separation capabilities.) Regardless of its origin, any EPS file that has been trapped in IslandTrapper 2.0 can then be color-separated by the program.

IslandTrapper for Power Macs is more than four times faster than the

68040-based version, the company says. Both versions are sold in one package for $4495. Users who bought IslandTrapper at the $2195 introductory rate can upgrade to 2.0 for $995; there's no upgrade fee for anyone who paid $4495 for a previous version of IslandTrapper.

Island Graphics has also announced IslandChecker, an electronic checklist utility that alerts service bureaus to missing fonts and continuous-tone images, and offers information on spot and process colors within their customers' EPS files. IslandChecker also lets the designer add annotations directly to a file. The program costs $495 for service bureaus (the price includes ten copies of the designer version); the designer version is available separately for $200.

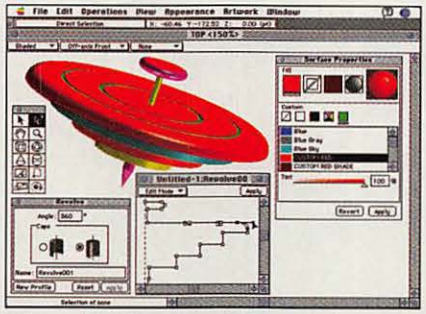
Meanwhile, Aldus has announced a PageMaker Addition (its name wasn't final at press time) that will let both experienced and novice designers perform basic trapping of color images (except EPS graphics) from within PageMaker, using default or customized settings and a few mouse-clicks. More-complex traps can be performed in Aldus TrapWise 2.0 ($4995) or in IslandTrapper. The Addition should be available in late May for under $100. Island Graphics, 415/491-1000, 800/255-4499; Aldus Corporation, 206/622-5500, 800/685-4586.—J.A.M.

PixelCraft Tries Beating the Drum

PIXELCRAFT (FORMERLY BARNEYSCAN) is now shipping the Pro Imager 8000, a single-pass, 36-bit flatbed color scanner that captures reflective and transparency artwork at resolutions up to 4000 dpi—within the same resolution range as some drum scanners.

The Pro Imager 8000 is unusual in that it uses three digital signal processors (DSPs) to speed scanning operations. While most scanners rely on the Mac's CPU to enhance the scanned image, the Pro Imager 8000 uses the DSPs for automatic sharpening, halftone descreening, and thresholding—as well as enhancing the image's contrast during scanning.

The $12,995 scanner supports a maximum image size of 11 by 17 inches and ships with PixelCraft's image-acquisition software (called QuickScan) and ColorAccess for color correction and separations. PixelCraft, 510/562-2480, 800/933-0330.—J.A.M.



Using Adobe Dimensions 2.0's pen tool, you can create 2-D profiles and then revolve or extrude them into 3-D shapes. Custom colors can be imported from Illustrator or created within Dimensions and applied to an object.

Expanding Dimensions

A MAJOR UPGRADE OF ADOBE DIMENsions—a tool for creating simple 3-D objects and type to incorporate into two-dimensional illustrations—will offer artists more control and flexibility in the design process. Version 2.0's more interactive approach will allow you to create 2-D objects within Dimensions, instead of having to import them from a 2-D program, and to view an object in 2-D and 3-D mode simultaneously. With the new pen tool, you'll be able to edit two-dimensional objects while seeing them updated in 3-D, as well as modify extruded or revolved objects without losing their 3-D attributes.

Other new capabilities include creating and editing custom colors, shading objects using any color, and printing from within the application. The program also offers multiple undos, background rendering, and more-powerful blend controls.

Dimensions 2.0 is expected to ship in the second quarter of 1994 and retail for $199. Upgrades are $69 (free for those who registered on or after March 14, 1994). Adobe Systems, 415/961-4400, 800/833-6687.—CATHY ABES



KEVIN CANDLAND

PixelCraft's new Pro Imager 8000 flatbed color scanner is one of the first to include three DSPs for fast scanning operations.

IN BRIEF

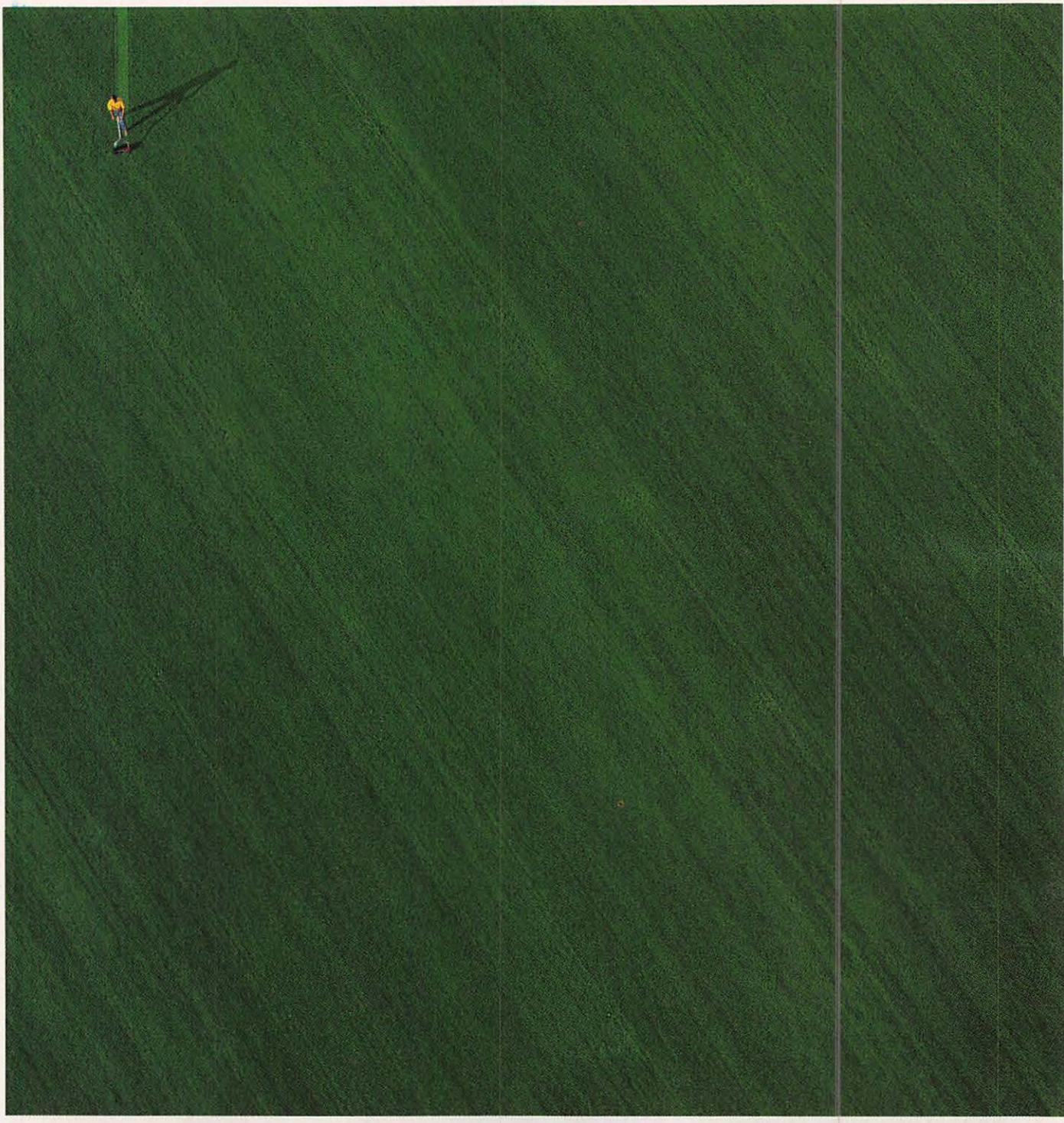
■ **To Scitex and Back** Taking PostScript files to a Scitex service bureau used to be a one-way street. But in addition to accepting PostScript files, Scitex America has announced that files created or manipulated on a Scitex Whisper workstation can now be saved in Adobe Illustrator EPS format, enabling Mac-based designers and illustrators to proof or archive final files. 617/275-5150.

■ **Supporting ColorSync** Apple Computer, Adobe Systems, Agfa, Eastman Kodak, Microsoft, Silicon Graphics, Sun Microsystems, and Taligent have formed a group called the ColorSync Profile Consortium (CPC). By joining the CPC, the companies agree to support Apple's ColorSync 2.0 in their operating systems and color-management products, and to ensure their ColorSync-capable products are compatible across platforms.

■ **Agfa Manages Color** Agfa's FotoTune Pro software, due in August, will characterize any output device to ensure that colors on a computer screen match those of the final output. FotoTune is Agfa's device-independent color-management system; FotoTune Pro uses Agfa's ColorTags color profiles, now available on CompuServe. Pricing wasn't available at press time. 508/658-5600.

■ **Roaring RIP** SuperMac Technology's ProofPositive 2.0 PostScript Level 2 dye-sublimation printer includes a hardware buffer, which frees up the Mac while an image is being printed; improved RIP performance; and a lower price ($6999; $14,999 for the two-page system) than SuperMac's original ProofPositive. 408/541-6100, 800/334-3005.

■ **Photoshop Gets a Charge** DayStar Digital's updated Charger Suites Volume 1 software promises to boost Adobe Photoshop filter speeds up to 50 percent for the digital signal processor (DSP) boards it supports. Version 1.5 of Volume 1 ships free with DayStar's DSP products; it sells separately for $119; as an upgrade it costs $49. 404/967-2077, 800/962-2077.



Imagine a high-performance 650hp mower with 10 sets of blades. Welcome to the world of MicroNet. We're reshaping the desktop landscape with storage products and a technical support network designed to increase your productivity. Our 17.3 GB Raven array has displaced the solitary drive. A 200 MB SyQuest has eclipsed the 88. The 1.3 GB optical rivals the speed of a hard disk. And our 32 GB DAT backs up those irreplaceable moments



Raven Array



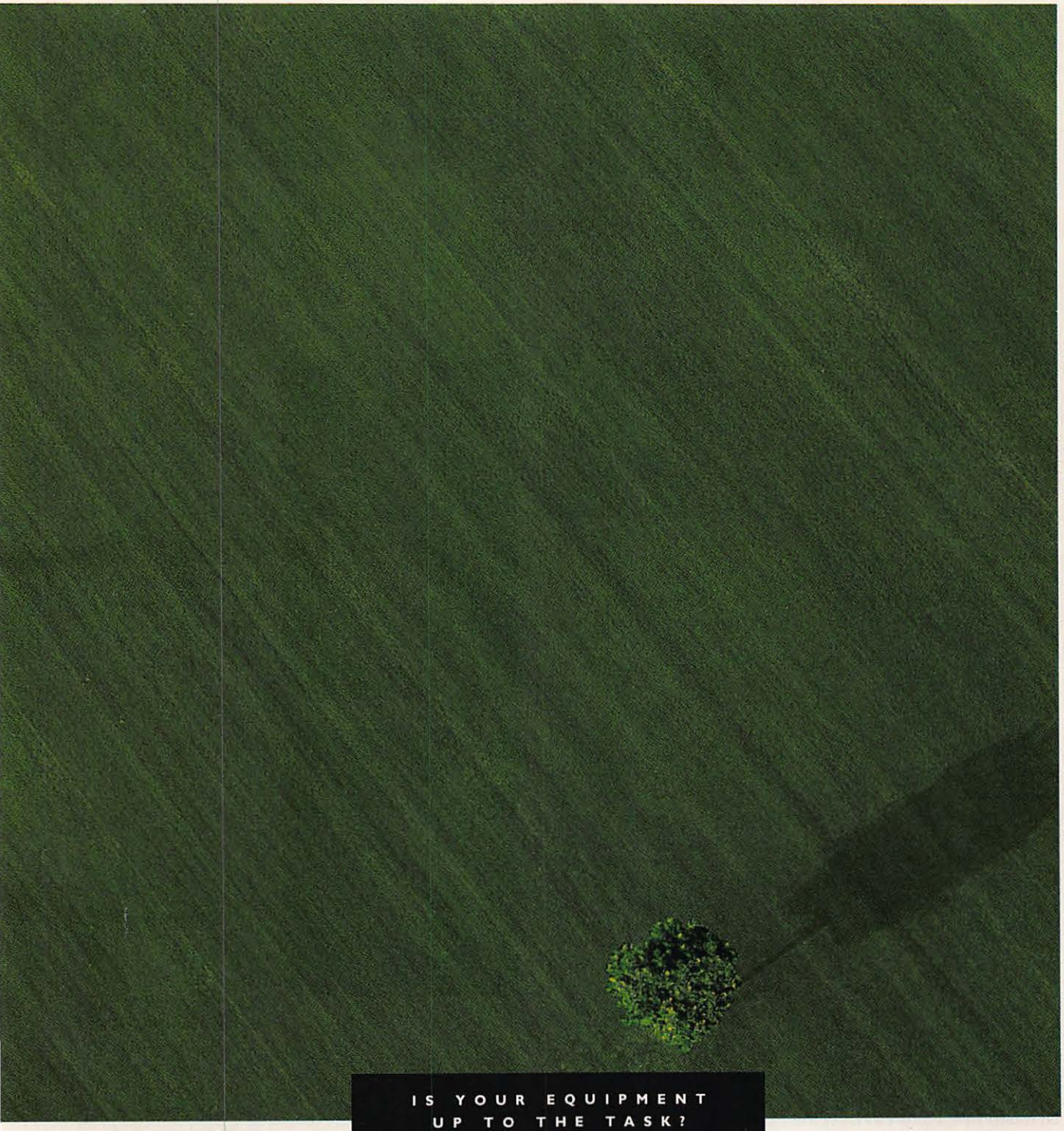
Optical Drive



SyQuest Drive



DAT Backup



IS YOUR EQUIPMENT
UP TO THE TASK?

between conception and completion. So in a world where time is measured in milliseconds and capacity in gigabytes, MicroNet provides productive solutions that can change the way you work. To impact your company's throughput, call your local reseller or 1-800-800-DISK.

MicroNet

All Trademarks, Registered Trademarks and Logos are of their respective holders.

Circle 139 on reader service card

Expert Graphics

GRAPHICS PROFESSIONALS SHARE THEIR SECRETS

by Cathy Abes

Artist: San Francisco–based John Lund has been a commercial photographer for 17 years. He began using Photoshop three years ago, and within six months was doing all his work digitally. He has been using Live Picture since he got his hands on a beta version last October.

How It Was Done: Lund created this conceptual image, which illustrates that time is money, for his growing stock-photo collection. He began by scanning in a photo of a dollar bill, which he converted to Live Picture's proprietary IVUE format and "inserted," or imported, into Live Picture.

After erasing parts of the dollar bill, Lund scanned the hourglass photo and inserted it as the second layer of the image, where he rotated it counterclockwise 10 degrees and created a stencil around it. Then he erased the image inside the hourglass, allowing the underlying image—the dollar bill—to show through the glass.

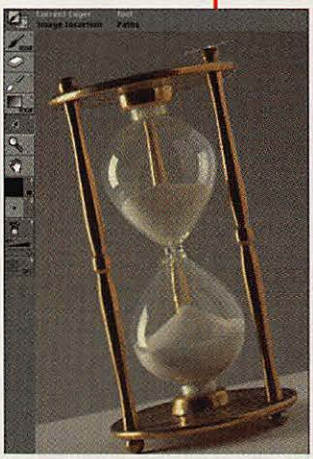
For the squeezed dollar bill inside the hourglass, Lund inserted another scanned photo as the third layer. After rotating it to align with the hourglass, he created a stencil around it and squeezed it into the shape he wanted. Then he rendered out the bottom portion of the distorted dollar, saved it in TIFF format, and imported it into Photoshop, where he applied a filter from Kai's Power Tools to give it a sandlike effect. Next he converted the image back to IVUE format and inserted it into Live Picture as layer four, then sized and positioned it.

The last layer of the illustration was Abraham Lincoln's profile taken from a scanned photo of a penny. After inserting it, Lund rotated, sized, and positioned it. He used a stencil to remove everything but the face to give the profile a hard edge, then with the eraser he added a soft edge to the back of Lincoln's profile.

Finally, using the Add/Edit command (View menu), Lund created the view of the image for final rendering by dragging a selection box around the area of the image he wanted to build. m



1 Using the eraser with a medium-size brush, Lund painted brushstrokes over the scanned dollar bill to erase parts of it; then he used the insert brush to put selected portions back in.



2 With the pen tool, Lund drew a path around the hourglass, from which he created a stencil. (In Live Picture, a stencil—which consists of a solid area and a hole cut into that area—is positioned on top of a mask: the solid part of the stencil hides the mask underneath it, while the hole lets the mask show through.)



3 After creating the stencil around the hourglass and activating (applying) it, Lund erased the solid interior of the hourglass to make the dollar image underneath visible.



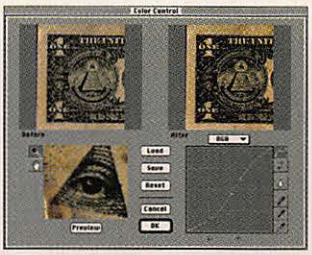
4 The Create menu provides three ways to insert an image into Live Picture: Image Insertion, Image Distortion, and Image Silhouette; which one you choose depends on how you plan to manipulate the image. Here, Lund used Image Distortion to insert the dollar bill that he would later squeeze into the hourglass.

THE TOOLS

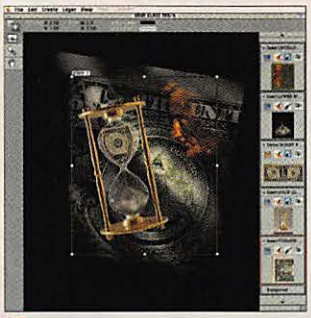
Hardware: Mac Quadra 950 with 140MB of RAM and a 1.6GB internal hard drive; Quantum 1.2GB external hard drive; SuperMac Thunder/24 accelerated graphics card; Relax Technologies 44MB SyQuest removable-cartridge drive; SuperMac SuperMatch 21 color monitor; Wacom 12-by-12-inch graphics tablet.

Software: Live Picture 1.5 B2; Adobe Photoshop 2.5.1; Kai's Power Tools 2.0.





8 To intensify the color on the dollar bill in the background, Lund manipulated the curves in Live Picture's Color Control dialog box. In the Preview window, you can move the image around to zero on any part of the image.



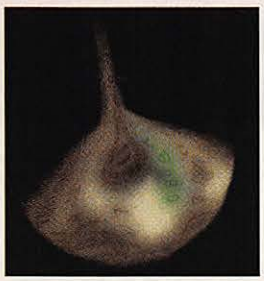
9 Once Lund finished manipulating the image, he drew a selection box around the area he wanted to render out for what's known in Live Picture as the final build. Displayed along the right side are the individual images—each on its own layer—that make up the illustration.



5 Using the pen tool to outline the scanned dollar bill, Lund made a stencil to eliminate the background area so that only the dollar bill itself would show.



6 Lund used the distort setting of the brush to push and squeeze the dollar bill until it appeared to be passing through the narrow middle of the hourglass.

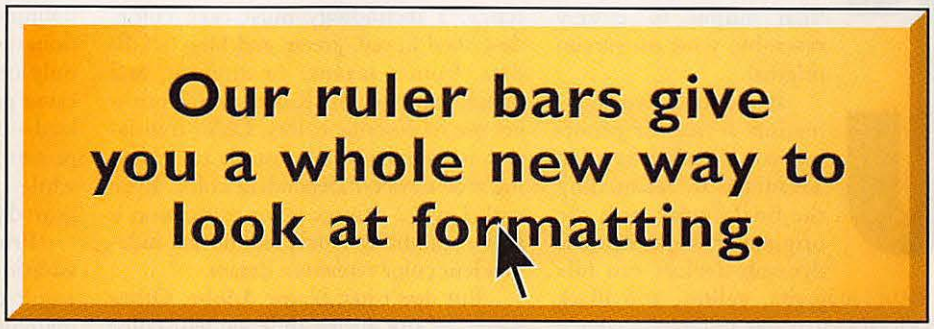


7 In Photoshop, Lund applied the Pixelstorm filter from Kai's Power Tools 2.0, which gave the dollar bill the appearance of turning into sand.

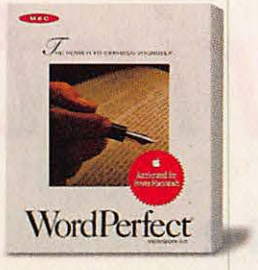


*Suggested retail price. Reseller prices may vary. You must own a competing word processor with a suggested retail price of $249 or more.
Offer good in the United States and Canada only. All trademarks are property of their holders. ©1994 WordPerfect Corporation. All rights reserved.

Click the button. It's so simple. Click. It's the easiest way to get things done. Which is



why new WordPerfect® 3.0 for the Mac® puts all the things you want from your interface in your face. Giving you more buttons to click than any other word processor. So features are easy to find. And use. Want to change your text formatting? Click. Apply a style? Click. Create a table? Click. Then you can bring up a different bar with all the table functions you want. Borders, editing—even math functions—it's all right there. Click. Our customizable button bars put your favorite tools right there, too. Like spell checking. Grammar checking. Our integrated drawing program. Whatever you want. There's even buttons for common tasks like bulleted indents. So you'll seldom have to do anything. Besides click. (And type, duh. This is a word processor.) But you can do other cool stuff, too, like run QuickTime.™ Or WordPerfect native on the Power Macintosh.® So visit your local reseller or **call us at (800) 526-7820 for our $99* competitive upgrade.** If the number was nine buttons shorter, it'd be as easy as our interface. Click.



Word processing that gives you the power to express yourself.

Accelerated for Power Macintosh

WordPerfect® macintosh®

Inside PostScript

Level 2 improves printer performance and promises color fidelity

Color printing is always a dicey proposition. With a lot of skill—and a little luck—you may get your final output to closely resemble your on-screen original.

If you use a dye-sublimation device for proofing, you already have a big advantage in reconciling the final output with the original artwork, because dye-sub devices can mix the cyan, magenta, yellow, and black (CMYK) inks to create millions of colors.

But creating a wide range of output colors is a far cry from matching a particular set of colors on screen. Adobe Systems gave publishers a boost when it released its long-awaited PostScript Level 2 drivers last year. Level 2, the second generation of Adobe's page-description language, added several features to reflect users' growing demand for color, a wider selection of fonts, and higher-resolution output. PostScript Level 2 drivers are bundled with printers that support Level 2, and they can be purchased directly from Adobe (Adobe PostScript Printer Driver 8.1.1, $24.95; 415/961-4400, 800/833-6687).

The latest revision of Level 2 cleans up a batch of code that had been muddied by the myriad extensions that were written to the original PostScript over the years. Color extensions, which gave PostScript the ability to describe and print colors, are now a part of the base language, as is Display PostScript, which uses the language to describe on screen the same graphics and fonts rendered on the printed page.

Level 2 also adds to PostScript's repertoire of printing capabilities. Printers that support Level 2 can fax PostScript documents, cache patterns and forms between multiple printings of the same document, and generate accurate screen angles for smoother halftone printing. Level 2 also compresses and decompresses documents.

Still a Little Off-Color

A big promise for Level 2 was *device-independent color*—a way to view documents on any monitor, print them on any printer, and have the colors appear the same (or as close as possible) from device to device. To achieve this level of consistency, a technology must take colors described in red, green, and blue (RGB) data, from a scanner or monitor, and match them to CMYK data, which printers use to describe colors. Color translation is a fundamental obstacle to achieving true device-independent color. Even with Level 2 drivers, color translation is still a stumbling block, and device-independent color remains a dream.

But don't just blame Adobe. Other pieces of the device-independent color puzzle must come from applications developers, monitor and printer manufacturers, and Apple. Apple's contribution is ColorSync, a system-level color-management scheme that will eventually encourage other parties to deliver device-independent color—provided they all write applications to support the scheme.

ColorSync is a system extension that allows your Mac to describe the colors for any device (monitor, scanner, or printer) in a common fashion. ColorSync 1.0, the current version, uses the RGB model in the Apple 13-inch Trinitron display to describe all RGB colors. This description is called a color profile. An application that supports ColorSync can call up the profiles of whatever devices are in use, match colors, say, between your monitor and your printer, then hand off the resulting file to the PostScript driver, which sends the file to the printer.

Unfortunately, there's a rub. The first Level 2 driver, version 8.0, did not support ColorSync. Version 8.1.1 recognizes ColorSync files, but because Level 2 and ColorSync do not use the same device profiles, they don't provide an exact match by themselves. Therefore, the output from your printer still won't match what you see on your monitor, because ColorSync and the Level 2 drivers are not completely compatible.

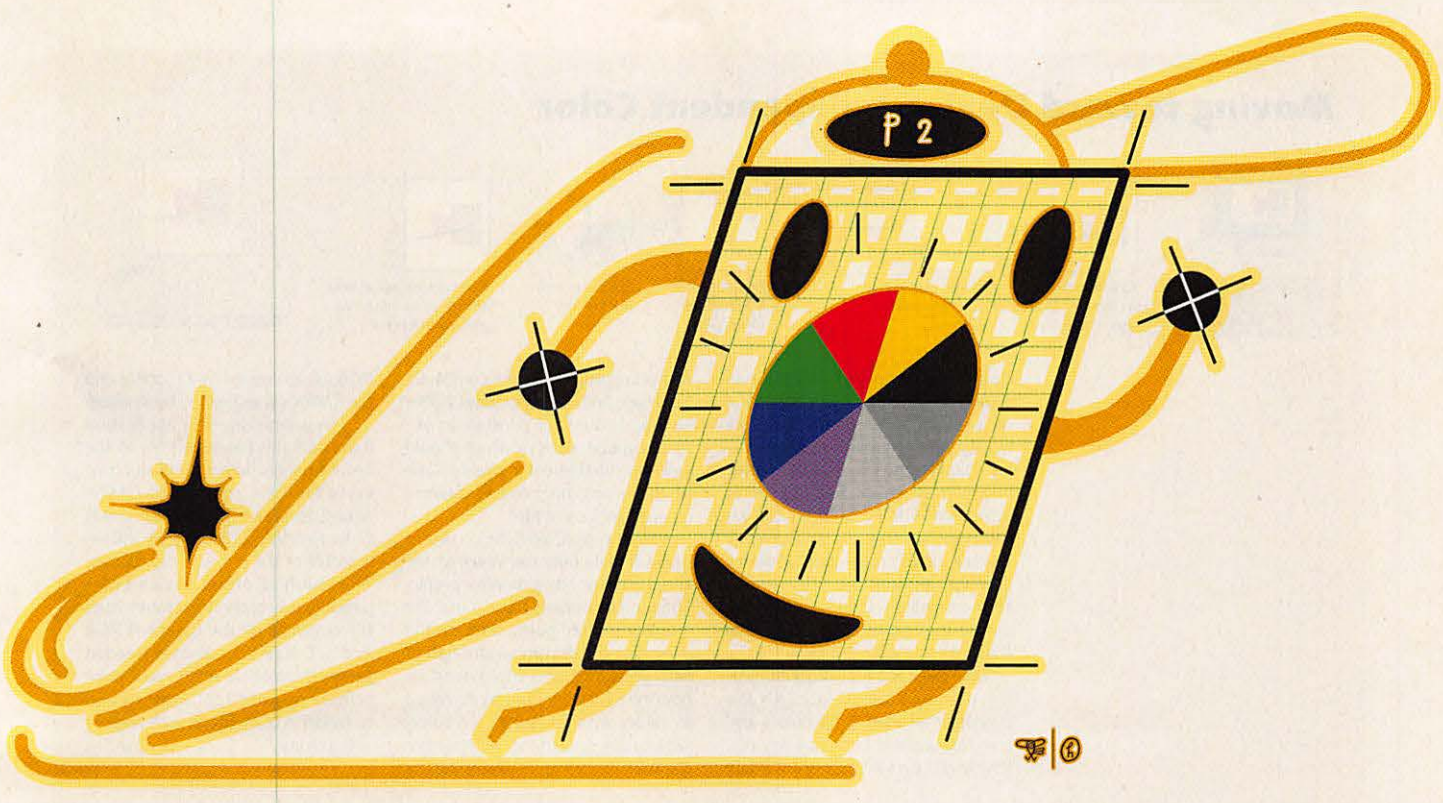
Calling a Shade a Shade

To make this marriage work, printer vendors need to provide *color-rendering dictionaries*—files that define a printer's colors and provide a wide range of values for each color.

Although these dictionaries help you get better color fidelity between monitors and printers, they don't guarantee it. While the Level 2 drivers support an unlimited number of color-rendering dictionaries, most Level 2 printers ship with only one general dictionary. This can cause problems if your needs are specialized—if, for example, you want to print presentation graphics on transparencies, while the dictionary in your printer is geared for plain paper.

Printer vendors can and will provide additional dictionaries, but clearly this won't close all the gaps in the color-matching process. For instance, not all monitor and scanner vendors have written ColorSync profiles for their devices. By the end of this year, however, one of the most important compatibility gaps—between the ColorSync profile and Level 2 driver—will most likely be bridged when Apple releases version 2.0 of ColorSync, which will describe colors the same way Level 2 does.

Meanwhile, by the time you read this,



Level 2

BY KRISTI COALE

Adobe should be close to shipping version 8.2 of its Level 2 driver, which will fully support ColorSync 1.0 and 2.X and should work to match the color profiles that ColorSync sends to the printer (see "Moving toward Device-Independent Color"). Just as Adobe Acrobat substitutes a similar font when the actual one isn't available, PostScript Level 2 will substitute a similar color profile when it doesn't find the required one in the output device.

Small Features, Big Results

One boost to color printing that does not depend on future versions of ColorSync or printer drivers is Level 2's halftoning algorithm. Through this scheme, PostScript is able to describe more lines per inch and smaller angles on screen and thus generate a higher-resolution image. The result is more color and image information, which allows for smoother color separations. PostScript Level 2's halftoning feature also enables you to create a low-resolution image for faster printing (as you may want to do when proofing).

The PostScript Level 2 drivers support a number of other printer-specific features. One way that they do this is through PPD (printer page description) files, portable ASCII files that tell the printer driver about a device's specific features. PPDs, which generally come from printer vendors, can tell the driver what type of paper is in which tray. For instance, if you need to print legal-size transparencies, or want to print on letterhead paper, the Print dialog box reflects that choice (see "Working Smart," *Macworld*, June 1994). Moreover, PPD files make it easier for printer vendors to offer new features that existing applications will readily support.

New Fax Standards

Level 2 also extends the benefits of PostScript printing to fax technology. The new drivers let printers that support PostScript Fax receive faxes as PostScript documents and send files to other PostScript Fax devices as well as to conventional fax machines. Output from a PostScript Fax printer is superior to that from an ordinary fax machine—documents are output on plain paper at the printer's highest resolution. And if the receiving printer supports large-format media, gray-scale, or duplex output, you can send PostScript Fax files that use those features.

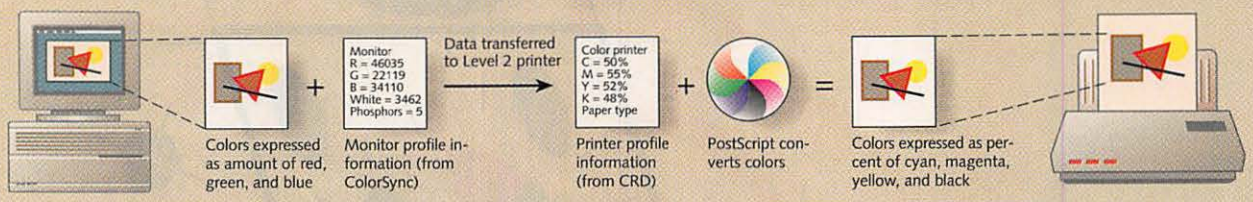
JOHN HERSEY

PostScript Fax printers support the CCITT Group III fax protocol, a worldwide standard establishing the base resolution for a fax at 200 dpi by 100 dpi, and a fine mode at 200 dpi by 200 dpi. And PostScript Fax includes the Error Correction Mechanism, a special feature of the Group III protocol that allows a receiving fax machine or printer to request retransmission of data that is corrupted in the sending process. The net result is a higher-quality fax.

PostScript Fax technology brings advantages beyond higher resolution. Network managers can avoid the hassle of hooking up individual fax modems, since network printers with faxing capabilities can double as network fax machines. Because these devices are also printers, they treat incoming and outgoing faxes the same as other documents, so there's no extra configuration involved. If the device is in the middle of a print job when it receives a fax, it holds the incoming fax in the print queue.

PostScript Fax also has built-in LZW compression and decompression capability; a PostScript Fax device generates a file that's more compact than ordinary faxes, reducing the time and cost of transmis-

Moving toward Device-Independent Color



ColorSync, Apple's system-level color-management system, is a critical step toward ensuring better color fidelity between monitors and printers. ColorSync will work much better, however, when it combines forces effectively with PostScript Level 2's color-conversion prowess. Currently PostScript offers more-detailed device profiles—descriptions of a device's color capabilities. ColorSync 2.0, due out by the end of the year, should eliminate this discrepancy.

ColorSync is a repository for profiles of various color devices; it's also a system for managing colors and translating them between devices. PostScript Level 2 offers an alternate conversion engine. When combined, ColorSync and PostScript Level 2 offer various options for printing an on-screen image, each of which should yield reasonable color fidelity. One of these options creates device-independent color files.

In that case, ColorSync combines the RGB data from the screen image and a corresponding monitor profile. The profile contains three parts: the monitor's white point, data on the minimum and maximum strength of each phosphor, and information on how the RGB values can be described as values within CIE-XYZ—a color-designation system that represents a common language for describing the RGB values created by a monitor and the CMYK values created by a printer.

The printer driver or application hands off this combined file to the Level 2 printer, where PostScript converts the RGB colors into CMYK equivalents, using a printer-resident Color Rendering Dictionary (CRD)—a profile of the printer's capabilities. This method offers device independence because the transmitted file contains all the essential RGB and CIE-XYZ coordinates needed for transformation. Any Level 2 color printer can use that information to render a color image with reasonable fidelity.

sion. And by the time you read this, PostScript Fax should support color faxes.

No More Memory Drain

Perhaps the biggest improvement in PostScript is that Level 2 makes printing faster and more efficient. Under Level 1, each operation that a PostScript printer performed—such as rendering and caching fonts—had its own memory allotment, and the user didn't know how the printer allocated memory for each task. One pool of memory stored fonts downloaded to the printer; another served as a temporary storage area for a document while it was being built. Once the document was printed, the memory was free to build another document.

If one operation—building the page, for example—ran out of memory, your document might not print. Adding more memory to the printer wouldn't necessarily alleviate the problem, because you had no way of knowing whether the printer would allocate the extra memory to the function that required it. Level 2 remedies this situation by making all printer memory available to all printing tasks.

Level 2 adds another important efficiency factor—pattern and form caching. Earlier high-speed printers had to rebuild common elements, such as logos or even entire forms, for each page within large, repetitive jobs. This negated some of the benefit of having a high-speed printer. Level 2 does for forms and patterns what the original PostScript did for fonts commonly used in a series of print jobs—it renders and downloads them into a cache of printer memory, where they can be used for each successive job. They do not have to be rendered and downloaded each time they are needed.

Level 2 also speeds up printing with compression and decompression filters. It supports several industry standards for compression, decompression, and ASCII encoding of binary data. The Level 2 drivers can compress various components of a print job before sending them over a network to the printer, where the Level 2 interpreter then decompresses each file before printing it. By generating smaller, compressed files, Level 2 reduces network traffic and speeds up printing.

Faster Rasters

Adobe has also incorporated a revamped Adobe Type Manager (ATM) rasterizer in Level 2. ATM, a set of PostScript subroutines, generates scalable font outlines on the fly for display on screen and speeds up font rendering for non-PostScript output devices.

Moreover, version 8.1.1 of the driver finally supports TrueType font rendering—something that, till now, PostScript clone vendors could claim as an advantage over PostScript. Generally, PostScript clones such as Phoenix Technology's PhoenixPage have closed the gap in performance, while Adobe has narrowed the gap in price. Since the clones support most of the major Level 2 features, consider your needs for printer features and your price range first. Support for official Adobe PostScript should be secondary.

Buying a clone is not entirely risk-free, however. Clone vendors are sometimes slow to implement their versions of new PostScript features; most, for example, have yet to build in support for PostScript Fax. (QMS is the only clone vendor to claim that its software supports PostScript Fax, but the company does not offer a printer with faxing capability.)

Proof Is in the Printing

The continuing absence of device-independent color is frustrating. But while Adobe and other parties keep working on this elusive goal, professional publishers can rely on relatively effective (if complex and costly) color-matching systems such as Cachet ($299; Electronics For Imaging, 415/286-8600, 800/285-4565).

Still, PostScript Level 2 is an impressive update. The latest drivers offer faster performance and better control over many aspects of printing. Plus, these drivers help unify two similar functions—printing and faxing—under one interface, with one device. This is no small feat. In the coming months, look for a rush of new printers with Level 2 support as well as the features we've been craving for years. **m**

Freelance writer KRISTI COALE has covered Macintosh desktop publishing and design for the past six years.

There are really only two reasons to buy a new Apple Multiple Scan Display.

It does more.

Instant resolution switching. *With the new Apple® Multiple Scan 20 and Multiple Scan 17 Displays, you can instantly change to the resolution that's best for the job—without restarting. Enlarge images for presentations or to edit pixels. Shrink images to display more on-screen or view full-page layouts.*

PC compatibility. *Good news for Mac®-and-PC offices. With over 10 resolutions, our 20- and 17-inch displays can meet virtually any video standard, including SVGA and VGA. Both of our new displays come with a PC adapter for instant plug-and-play compatibility.*

Brighter screen. *Both displays feature Trinitron™ screens. So the picture is noticeably clearer and sharper. It's also up to 30% brighter than Apple's previous large-screen displays. The flat screen shape minimizes distortion and reflected glare.*



The versatile new Apple Multiple Scan 20 Display.

Easier on your eyes. *The Multiple Scan 20 Display seen here and the new 17-inch display both have 75 Hz screens with special antiglare, antistatic treatments. Each display also passes strict Swedish MPR-II electric and magnetic emissions standards.*

Powerful options. *Add the Apple Macintosh® Display Card 24AC to your computer, and you'll bring 24-bit color to either Multiple Scan Display. You'll also enjoy QuickDraw™ acceleration up to 30 times faster than with unaccelerated video cards.*

Energy-saving. *We meet EPA Energy Star standards. With our unique Energy Saver software, you decide how long the screen is idle before going into power-saving mode. You'll cut your power costs by up to 70% and extend the life of your picture tube at the same time.*

And it's from Apple. *As you might expect, both Apple Multiple Scan Displays are designed to work seamlessly with all Macintosh computers. That includes rigorous testing to ensure plug-and-play compatibility with our new line of Power Macintosh™ computers.*

**Apple Price as of 4/1/94. Actual retail prices may vary depending on location. **As of 4/1/94, the SuperMac 20•T XL is $2,399 (MSRP) and the Radius intelliColor 20T is $3,199 (MSRP).* *© 1994 Apple Computer, Inc. All rights reserved. Apple, the Apple logo, Mac and Macintosh are registered trademarks and Power Macintosh*

Here's the perfect upgrade offer.

Now there are two great reasons to upgrade to new WordPerfect® 3.0 for the Macintosh® today:



- **$99* special upgrade price for users of competitive word processors.**
- **Get the Random House Webster's Electronic Dictionary and Thesaurus, College Edition for just $49—a 50% savings—when you upgrade.**

To get this new upgrade, visit your reseller or fill out this order form and mail it. For faster service, fax to (801) 228-5277, or order by phone at (800) 526-7820.

WordPerfect®

Name_____

Company Name_____

Address_____

City_____ State_____ Zip_____

Daytime Phone (_____)_____

Current Word Processor is_____ Version_____

My License Number is_____

Credit Card Number_____

Expiration Date_____

Cardholder's Signature_____

Please send me _____ copies of the $99 WordPerfect 3.0 for the Macintosh upgrade. (Plus $4.50 shipping and handling.)

Please send me _____ copies of the half-price Random House Webster's Electronic Dictionary and Thesaurus, College Edition. ($49 plus $4.50 shipping and handling.)

$_____ Total cost

☐ My check or money order is enclosed.

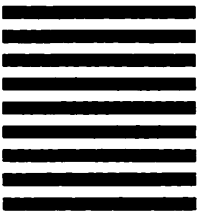
☐ Mastercard ☐ Visa ☐ American Express

*Direct order from WordPerfect Corporation. Or visit your reseller—reseller prices may vary. Offer good through 9-30-94.

WordPerfect is a registered trademark of WordPerfect Corporation. All rights reserved. ©1994 WordPerfect Corporation. WHMAA



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 36 OREM, UT

POSTAGE WILL BE PAID BY ADDRESSEE

WordPerfect

Priority Orders Processing Q2300
WordPerfect Corporation
1555 North Technology Way
Orem, UT 84057-9912



SAVE $23.40

For Mexican and Canadian subscriptions, add $18 for shipping. Add $70 for all other foreign countries.

Subscribe today and...

SAVE $23.40!



YES! Send me a one-year (12 issues) subscription of Macworld for $24. I'll save $23.40 off the annual newsstand price. Please bill me later.

name_____

company_____

address_____

city/state/zip_____

Macworld

4CCL1

SAVE $23.40!

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 1167 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

Macworld

SUBSCRIPTION DEPARTMENT
P.O. BOX 51666
BOULDER, CO 80321-1666

SAVE $23.40!



Enter e•World™ now with your *free* starter kit.

I'd like to know more about the exciting, new on-line service from Apple.
Please send me the eWorld starter software package—a $19.95 value—free.

Name

Company Name

Home Address Apt./Suite #

City

State ZIP Phone ( )

Check one: ☐ 1.4MB Disk ☐ 800K Disk

e•World™

23MW794

©1994 Apple Computer, Inc. All rights reserved. Apple, the Apple logo, and Macintosh are registered trademarks of Apple Computer, Inc. eWorld and the eWorld logo are trademarks of Apple Computer, Inc. The eWorld logo is copyrighted in the name of Apple Computer, Inc. Offer does not include on-line charges. Offer expires 10/31/94. To enter eWorld, you'll need the free eWorld software, an Apple Macintosh computer with system software version 7.0 or later and at least 4 megabytes of RAM, a phone line, and a Hayes-compatible modem.

TM

It's easy.
It's exciting.
It's economical.
It's eventful.
It's e•World.

Enter e•World™ now with your *free* starter kit.
I'd like to know more about the exciting, new on-line service from Apple.
Please send me the eWorld starter software package—a $19.95 value—free.

Name

Company Name

Home Address Apt./Suite #

City

State ZIP Phone ( )

Check one: ☐ 1.4MB Disk ☐ 800K Disk

e•World™

23MW794

©1994 Apple Computer, Inc. All rights reserved. Apple, the Apple logo, and Macintosh are registered trademarks of Apple Computer, Inc. eWorld and the eWorld logo are trademarks of Apple Computer, Inc. The eWorld logo is copyrighted in the name of Apple Computer, Inc. Offer does not include on-line charges. Offer expires 10/31/94. To enter eWorld, you'll need the free eWorld software, an Apple Macintosh computer with system software version 7.0 or later and at least 4 megabytes of RAM, a phone line, and a Hayes-compatible modem.

TM



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 11370 BRIDGETON, MO

POSTAGE WILL BE PAID BY ADDRESSEE

eWorld Starter Kit
Apple Computer, Inc.
PO Box 4493
Bridgeton MO 63044-9718





NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 11370 BRIDGETON, MO

POSTAGE WILL BE PAID BY ADDRESSEE

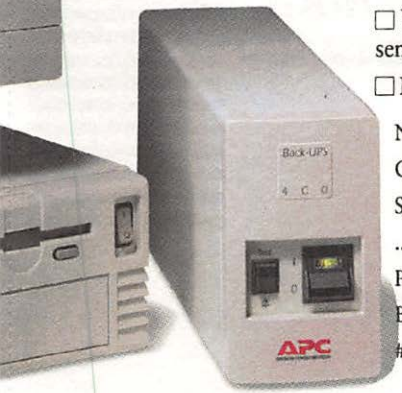
eWorld Starter Kit
Apple Computer, Inc.
PO Box 4493
Bridgeton MO 63044-9718





Free Power Solutions Handbook

What are the myths and musts of Mac protection? What are the 10 most common power protection mistakes? The top tips for adding reliability to your LAN? Get your FREE copy and find out!



☐ YES! I'm interested in trading up a competitive or older UPS to a Back-UPS. Please send Trade-UPS info.

☐ YES! I'm interested in APC's Reseller Partner Program. Please send more info and an application.

☐ No! But I would like a FREE Power Protection Sales Handbook.

Name ..... Title .....

Company .....

Street/City/State .....

.....

Phone/Fax .....

Brands of UPS sold? .....

of UPSs sold per month? .....

Name _____

Company _____

Address _____

City _____

State _____ Zip _____

Phone _____

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 36 WEST KINGSTON, RI

POSTAGE WILL BE PAID BY ADDRESSEE

APC

AMERICAN POWER CONVERSION

132 Fairgrounds Road
P.O. Box 278
West Kingston, RI 02892-9920

It costs less.

Surprise, surprise. *At $2,149,* the Apple Multiple Scan 20 Display actually costs less than other 20-inch displays, such as the SuperMac™ 20•T XL and the Radius Intellicolor™ 20T.** Considering that the Multiple Scan 20 has more unique, built-in features, that is a surprise.*



The economical new Apple Multiple Scan 20 Display.

Apple

and QuickDraw are trademarks of Apple Computer, Inc. Radius Intellicolor is a trademark of Radius Corporation. SuperMac is a trademark of SuperMac Technologies, Inc. Trinitron is a trademark of Sony Corporation, registered in the U.S. and other countries. This ad was created entirely on Macintosh personal computers.

EDITED BY DAN LITTMAN

At Work

THE LATEST TOOLS FOR BUSINESS COMPUTING

PowerPoint Dresses for the Office

MICROSOFT IS MODIFYING POWERPoint's interface to make the program look and work more like its Microsoft Office–mates, Word and Excel. For example, PowerPoint version 4.0 will have customizable tool bars and a status bar across the bottom of the window. The presentation package will also have what Microsoft calls Wizards, helpers (first seen in Excel) that walk you through such tasks as choosing an effective template or formulating ideas into bite-size bullet points.

Besides Wizards, PowerPoint 4 has other features that take the guesswork out of creating presentations; these include transition-effect previews in the slide-sorter view and a rehearsal mode that records how long you spend on each slide as you practice your speech before an audience of pencil holders, tape dispensers, and coffee mugs.

PowerPoint relies on OLE to connect to a separate, hot-linked graphing module, and to create tables using Word's table editor. A button can also send the content of a PowerPoint file into Word or import a Word document.

PowerPoint 4.0 will include about 1100 pieces of clip art with a keyword index, and the program has a wide range of drawing tools for modifying clip art or creating new art. PowerPoint 4.0 will list for $495 and be included in the $695 Office. Microsoft, 206/882-8080, 800/426-9400.—D.L.



JOSEPH POPA

ActiGraf Models Business

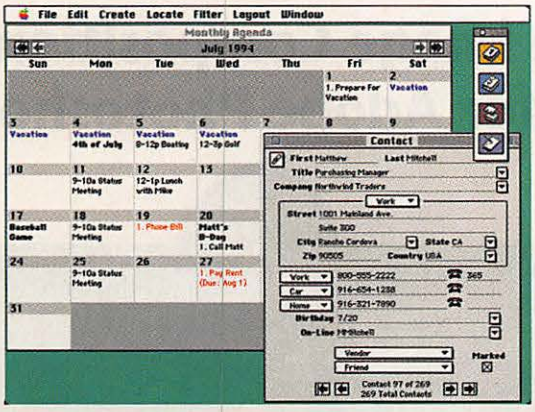
TO RESTRUCTURE YOUR BUSINESS and make it operate more efficiently you must understand how it works now. That requires modeling your business—its manufacturing, decision-making, paper-tracking, transportation, and other processes—to find the efficient steps, the bottlenecks, and how they affect each other. A whole class of software has emerged to help managers grasp the big picture by linking iconic representations of steps in a process, such as waiting for something else to happen, acting in a certain way based on a decision, and so on.

A new company called Business Modeling Systems is entering the market with ActiGraf. ActiGraf is based on IDEF, a modeling technique developed by the Air Force to analyze manufacturing. ActiGraf uses an iconic version of Petri nets, which represent sequential and parallel steps and decision points where processes diverge. You can designate that steps take a certain amount of time; send their results to another step; and embed basic calculations. After you connect all the icons, you can run the model as a simulation to see an animated representation of what happens.

ActiGraf is $795; its ship date was not set at press time. Business Modeling Systems, 415/941-3901.—D.L.

Claris Enters PIM Market

NOBODY KNOWS JUST WHAT A PIM—personal-information manager—is, but software vendors agree that we all need one. That's why Claris, which sticks to products with broad horizontal appeal,



Claris's new personal-information manager, Claris Organizer, showing the calendar in month view and the contact manager.

is launching a PIM under the low-price Claris Clear Choice label.

Claris Organizer (CO) follows in the footsteps of products like Common Knowledge's Arrange and Rae Technology's Rae Assist with an ability to understand information as you enter or manipulate it and to automatically build relationships between different pieces of information. For example, if you drag Joe Smith's name and phone number from the address book to the to-do list (yes, data can be dragged between windows), CO creates a new to-do item labeled "Call Joe Smith."

CO provides all the standard PIM capabilities: printing labels and standard pocket-notebook formats, searching for items using highly specific criteria, and interrupting other applications with its reminders, among others. Creating new contacts, to-dos, and notes can be partially automated with templates that can include priority level, category, boilerplate text, and other information.

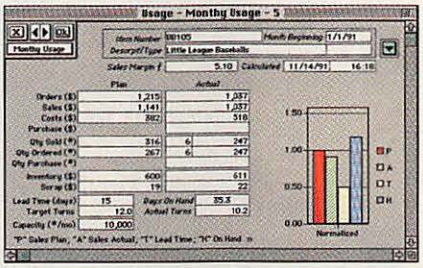
With CO, Claris has solved some problems that beset competing products. Banners—colored bars that indicate events lasting several days—appear in an area above the calendar itself to avoid obscuring information. You can change the field name for some fields across all records, and for other fields, on individual records.

CO should list for $75 to $100 and should ship in July. Claris Clear Choice, 408/727-8227, 800/325-2747.—D.L.

Automating Sales and Operations

NO SALESMAN IS AN ISLAND. IN FACT, a salesperson's work is just part of a series of steps that begins when a prospect is identified and continues long after the prospect becomes a customer. With the complete sales cycle in mind, James Technologies developed theCustomer to roll sales-automation support into an operations-oriented database for managing inventory and receiving, invoicing and receivables, and other tasks.

James Tech has been marketing the 4th Dimension–based program in custom versions for several years, but 3.0 is the first version of theCustomer to be generally available. All transaction information can be associated with general-ledger account codes for export to an accounting system. theCustomer includes SuperReport, an embedded 4D extension for generating reports. The program lists for $649 for one user, including a runtime version of 4D; pricing is less per user for quantity buys. James Technologies, 612/484-9549, 800/735-0635.—D.L.



One of theCustomer's reports, showing plan-to-actual for sales of an item in inventory.

IN BRIEF

■ **Time-Billing for Newton** The Newton continues to attract new developers of practical business-oriented software. TimeReporter, from iambic software, is designed for attorneys, consultants, and others to record the time spent with clients and then generate billing statements. TimeReporter can import and export information including contact and calendar information, as well as accounting information. iambic, 408/746-3709. (For more on time-billing, see this month's *Working Smart*.)

■ **SQL, New Analyses for MapInfo** MapInfo 3.0 for the Mac will include MapInfo Corporation's SQL DataLink for access to Sybase and Oracle databases. Version 3.0 also has improved features for creating and balancing regions such as sales districts. In addition, the new version has improved thematic maps and can display a raster image, such as an aerial photo, underneath a vector map. Version 3.0 should ship in the fall for $1295. MapInfo, 518/285-6000.

WordPerfect's Paperless Future

WHEN WORDPERFECT RECENTLY announced plans to wrap its future around networking giant Novell, WordPerfect—so well known for word processing software that creates electronic documents—also announced a future in documents that are distributed and read electronically.

Like the competing Adobe Acrobat, Farallon's Replica, and No Hands' Common Ground, WordPerfect's Envoy consists of a print-to-disk utility and a viewer. The viewer can be embedded in documents so that the recipient can open them without owning Envoy. The viewer also provides mark-up tools for commenting on documents; Envoy owners can later import comments into the original file. Envoy can embed TrueType fonts or try to match font metrics to fonts installed on the recipient's system. For navigating inside Envoy documents, the person creating the document can include hypertext links and bookmarks, and the viewer provides text-search capability and thumbnail views.



Envoy is not the product's final name. It should ship in mid-1994 for $189, with no license charge to embed the viewer. WordPerfect, 801/225-5000.—D.L.

SPECULAR

COLLAGE™

The Image Composition Tool for Adobe Photoshop™

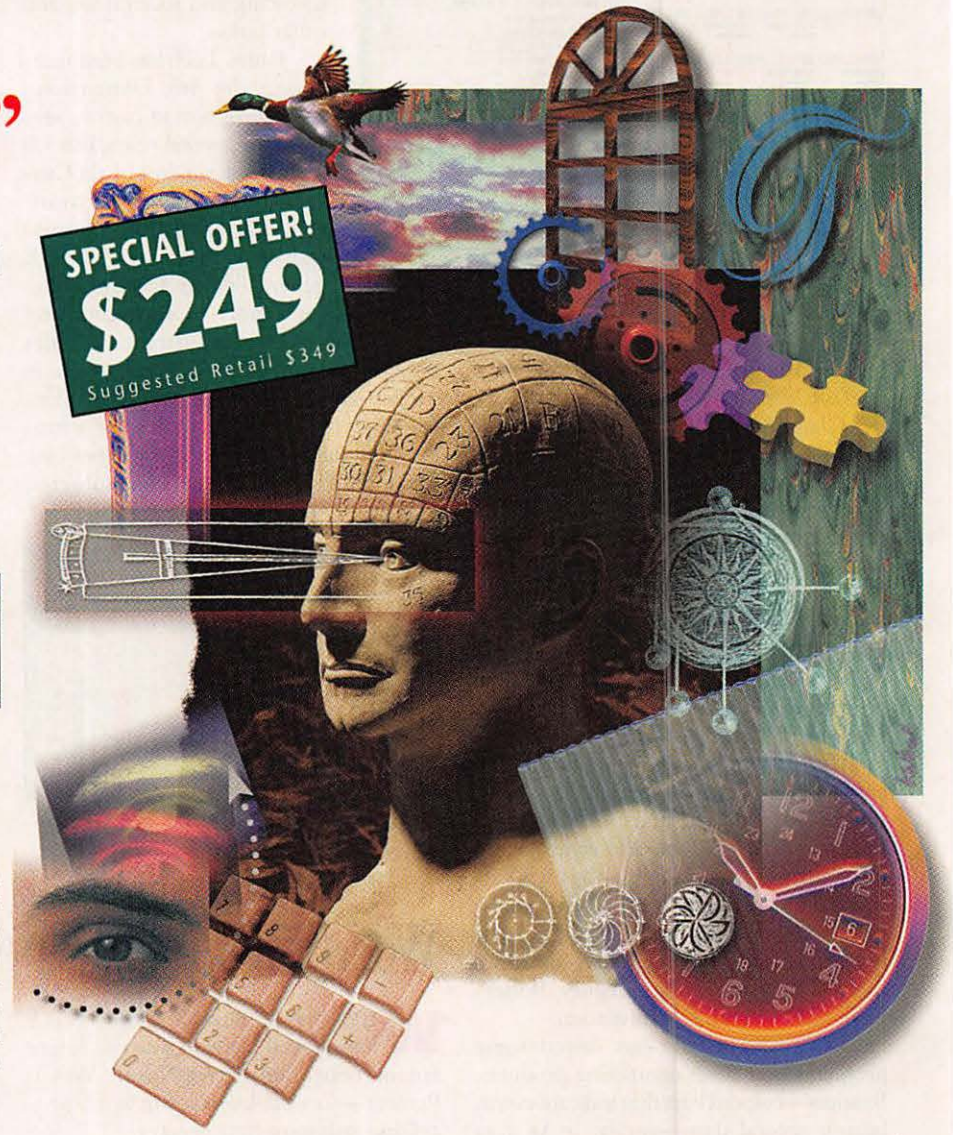
"◆◆◆◆"

"A valuable tool that should be on the shelf of anyone who manipulates images on the Macintosh."

MacWEEK, January 24, 1994



Specular Collage lets you quickly combine high-res images, without using a lot of RAM. Each image is a separate object—even after it's been blended with others. Layout images with the convenience of rulers, guides, image grouping and layers. Enhance your composition with a rich selection of effects such as transparency, automatic drop shadows, feathering, and Photoshop filters. Anything you do in Collage can be changed at any time, giving you total creative freedom!

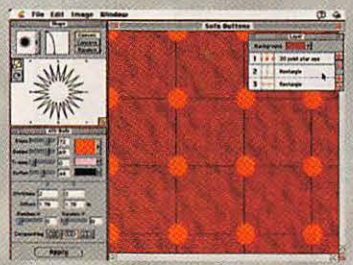


SPECULAR

TEXTURESCAPE™

SPECIAL PRICE $149!

Design an infinite variety of textures for print, video, & multimedia.



Design the exact texture you want, or one you've never imagined possible! TextureScape gives you the control to design detailed and rich textures, while freeing you to play with color, light, and motion. TextureScape's files take up little disk space (under 30K each), yet textures can be rendered at any size or resolution needed.

TextureScape can also morph between textures! Compose a QuickTime movie of a marble background morphing into your logo. Achieve astonishing effects for your next presentation, video, or multimedia project.



An unlimited collection of textures... for less than the cost of one CD-ROM.

CALL SPECULAR INTERNATIONAL AT 1-800-433-SPEC

Specular Collage™, Specular TextureScape™, and the Specular International logo are trademarks of Specular International, Ltd. Adobe Photoshop™ is a trademark of Adobe Systems, Inc. Macintosh® is a registered trademark of Apple Computer, Inc. Collage Art by Joseph Kelter / Bad Cat Design, Philadelphia, PA. © 1994Specular International. All rights reserved.

Circle 41 on reader service card



BY JIM HEID

Working Smart

Time-Billing Software

TIME IS NOT MONEY—NOT IF YOU DON'T keep track of it. Many professionals, from attorneys and architects to consultants and freelancers, bill by the hour. But too many of these folks rely on time-billing systems that are, shall we say, informal: notebooks with entries scrawled in the margins, slips of paper tossed in an envelope, guesstimates jotted down during the bus ride home. And every time these casual timekeepers forget to log a phone call or record a consultation, they lose money.

If you're in this group, you should know about software that helps you track—and charge for—your time. Time-billing software keeps a database of the work you do and provides accounting features for generating invoices and performing other functions. Some time-billing programs can link directly to an accounting system's receivables file; some even offer project-management and project-analysis capabilities that let you create charts and reports showing how you've allocated personnel to projects.

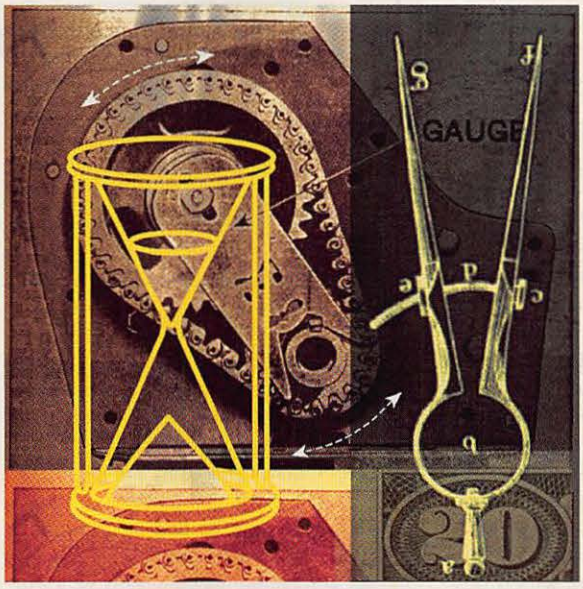
How Time Billing Works

At the core of a time-billing package is a database manager that stores each variable in the time-billing equation: the names of your clients, the services your company provides for them, the personnel who perform the work, and the rates you charge for each service.

To set up a time-billing program, you generally begin listing the kinds of services you render, along with the hourly rate you charge. All time-billing programs let you specify details, such as whether the activity is taxable, billable, or nonbillable, and they all provide a category for keeping track of such expenses as couriers and mileage. With some programs, including Timeslips Corporation's Timeslips III and LapTrack, you can specify a markup or discount on labor and expenses.

Another phase of the setup process involves pecking in the names and addresses of existing clients. If you've already entered this information elsewhere—for example, in a database or a contact-management program—there's a good chance you can import it into the time-billing package instead of retyping everything. Most programs can import tab- or comma-delimited text files (for details on importing and exporting database information, see *Working Smart*, December 1993).

You don't have to set up everything in a rigid order. All time-billing programs allow you to enter new clients and define new activities at any time. But it's a good idea to define a set of activities at the outset to ensure that you're naming them consistently. This is especially important if several employees will be sharing a time-billing database on a network.



You also need to specify how your company charges for work. In most companies, rates vary depending on three criteria: the employee (consulting with a senior partner might command a higher rate than working with a junior partner), the task (an architect might charge more for design work than for drafting), and the client (a big customer might get a discount). Overall, Timeslips III, Satori's Project Billing, and DesignSoft Time & Billing do a better job accommodating this three-dimensional billing grid than the competition. Brainchild's Shortlist doesn't even let you specify a different rate for each employee—not surprising, given this program's personal-information-manager orientation.

Timing Is Everything

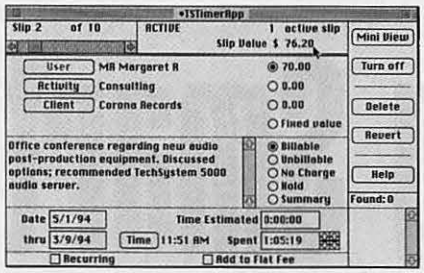
The real fun begins after you've survived the initial setup and started tracking your time. You can manually enter data in batches—at lunchtime, at the end of the day, or whenever you get a moment. But unless you have an elephant's memory, the batch-entry method requires you to write everything down until your data entry session—and that's not much better than the notebook or shoebox method you're trying to replace.

If you work with a computer at hand, you can use the built-in timers that Timeslips III, LapTrack, Satori's Job Cost/Time Billing, and Project Billing provide. These timers work with the Mac's built-in clock to calculate the amount of time you spend at a task. You just notify the program when you start and stop.

In keeping with manual time-billing traditions, most programs call their time-tracking windows time slips. Generally, you create a time slip by selecting a client, specifying the activity to be performed (and, in an office, who's performing it), and noting whether or not it's a billable activity (see "Making a Time Slip"). You then enter the time data manually or activate the program's timer. All time-billing programs allow you to annotate time slips

continues

JENNIFER JESSEE



Making a Time Slip In Timeslips III you record activities in the time-slip window. Note the charge being run up (next to the Slip Value field name). Clicking on the Mini View button shrinks the window to show the client, time, and current charges.

with comments that you can optionally include in invoices or reports.

If clients can see your screen as you work, you might not want to use a timer feature. Such timers display a running tally of how much a given activity is costing, and clients might not enjoy watching the charges mount as they sit at your desk. Only taxi drivers can get away with that sort of thing.

Reporting Results

Like database managers, time-billing programs provide features for locating time slips by various search criteria—who performed the work, the type of work performed, the client, and so on. You might use a search feature to determine who worked on a particular project on a given day, perhaps to follow up on a customer's question or complaint. Or you might use it to determine how much nonbillable work was performed on a given job—perhaps to monitor an employee's performance or to locate weak links in your company's processes. Part of what makes a time-billing package valuable is how well its reports let you examine and analyze the information you've gathered.

Most often, the reports you create are invoices that summarize the work performed for clients and show the amounts due. If you already use accounting software, you can export the data to your accounts receivable module. Better still, Timeslips III users can turn to TAL (Timeslips Accounting Link), which ties Timeslips III into many popular accounting packages. Satori's Job Cost/Time Billing meshes with Satori's other Components products of accounting modules.

What other types of reports might you create? That depends on what you want to know. With employee-oriented reports, you see who is doing what for which clients—good for monitoring employee performance and for determining who is available to take on a new project. You can apply multiple sorting levels when creating the report to look at each employee's activities from different angles: time spent on specific tasks, on specific projects, and so on.

Client-oriented reports tally up the year-to-date or monthly billings for specific clients, show past-due amounts, and list activities performed for a client. Work-in-progress reports give you the up-to-the-minute status of accounts to help you make informed billing decisions.

Of the programs I looked at, Satori's Job Cost/Time Billing has the best report-design features (for $1495, it had better). The package provides on-screen rulers and other layout tools for designing reports, as well as straightforward dialog boxes for specifying their contents. Reports can even contain charts of, say, billings by employee by month. The program comes with more than 25 canned report designs that appear in a menu for quick recall. The reporting features in Satori's Legal Billing II and Project Billing are less comprehensive; overall, they lack the depth of Timeslips III and Job Cost/Time Billing. But both are good basic programs that need only about 300K of memory to run (Job Cost/Time Billing, by comparison, needs 1.4MB)—something to keep in mind if you're using a PowerBook or an entry-level Mac.

Timeslips III also has strong reporting features, although its layout tools aren't as polished. LapTrack's reporting features are less complete, but they're adequate for a program intended to be used on the road. LapTrack provides other features useful to road warriors, such as a telephone-dialing command that dials customers using the PowerBook's internal modem. LapTrack can even begin logging time automatically when the dialing is complete.

Watching Your Windows

I've mentioned that time-billing packages let you make entries manually and also provide a stopwatchlike timer you can start and stop. But if the work for which you charge takes place on the Mac itself—for example, doing online research with a telecom program, or designing pages in a desktop publishing program—there are even easier ways to track your time. Coral Research's TimeLog and ASD Software's WindoWatch can watch over your shoulder and automatically record the amount of time you spend in various applications and documents. Both packages include

continues

MORE TIME-TRACKING BENEFITS

Ease of tracking and charging for your time is reason enough to consider a time-billing package. But there are other benefits.

- By isolating billable and nonbillable time, you can find weak links in your business's organization. For example, if you're a graphic artist and often spend a nonbillable hour to drive across town to use a service bureau's color printer, tallying up all those nonbillable hours might show that it makes more sense to buy your own printer.
- If you charge by the job instead of by the hour, you can still use a time-billing program to find out how much you're making on each aspect of a job. By comparing reality against your estimated charges and costs, you can adjust future estimates.
- If you're a department manager, a time-billing package can help you determine staffing requirements, by keeping track of how many jobs and how much work goes through your department. Large institutions can also use time-billing software for interdepartmental billing—for example, an in-house publishing department might track the time it spends on projects for the marketing, training, and personnel departments.

These examples show that a time-billing program can help you gauge your business's efficiency. But don't let yourself become a slave to such software. Anyone who has worked in a service business that charges by the hour knows that time slips can be fudged and finessed to cover up, say, an extra-long lunch break or an error that required work to be redone. Basing major staffing decisions solely on time-billing data ignores the way people actually work.

What's more, employees may find it demoralizing to know that their activities are being monitored minute by minute. Nonetheless, it's happening more and more in fields that rely on computers. For example, calls taken by directory-assistance operators are timed, and operators who don't meet their quotas can expect to hear from their supervisors. I'd hate to see this kind of digital dogging make its way into the personal-computer world. Time may be money, but employees are people.

Bye Bye Bernoulli.™
See Ya SyQuest.®
Hello Pinnacle!

NEW 230MB

3.5" Magneto Optical Drive

230 Megabyte

3600 RPM



Optical Drive
$999.00
Travel Case
& Battery Pack
$199.00
Optical Media
$69.00

Some technologies come and go. . . but optical is here to stay.
Say hello to Pinnacle's new Tahoe™ 230 Portable 3.5" Optical Hard Drive.

The Tahoe™ provides ISO interchangeability and removable storage with multiple media sources, while Bernoulli™ and SyQuest® offer no standards support.

PINNACLE OPTICAL VS. MAGNETIC REMOVABLE				
COMPANY	1.0GB	1.5GB	2.0GB	2.5GB
Pinnacle Tahoe™ 230	$1499 w/4.3 disks	$1649 w/6.5 disks	$1799 w/8.7 disks	$1949 w/10.9 disks
Iomega® Bernoulli™150	$1492 w/6.7 disks	$1889 w/10 disks	$2286 w/13.3 disks	$2682 w/16.7 disks

*Prices acquired directly from system integrator and/or manufacturer on 2/22/94. Formula: Final capacity divided by cartridge capacity multiplied by cartridge price and added to drive price.

PINNACLE OPTICAL VS. MAGNETIC REMOVABLE			
COMPANY	2.0GB	2.5GB	3.0GB
Pinnacle Tahoe™ 230	$1599 w/8.7 disks	$1749 w/10.9 disks	$1899 w/13 disks
MicroNet SyQuest® 270	$1763 w/7.4 disks	$2039 w/9.3 disks	$2315 w/11.1 disks
PLI SyQuest® 270	$1588 w/7.4 disks	$1810 w/9.3 disks	$2032 w/11.1 disks

And there's no doubt that over time optical storage costs *less* than magnetic storage.



It's a perfect solution for both portable and desktop computing.



PORTABLE **DESKTOP**

Thousands of graphic designers, pre-press facilities, multimedia creators and personal computer users are making the change to optical storage. So say hello to optical – and see ya later to magnetic technology.

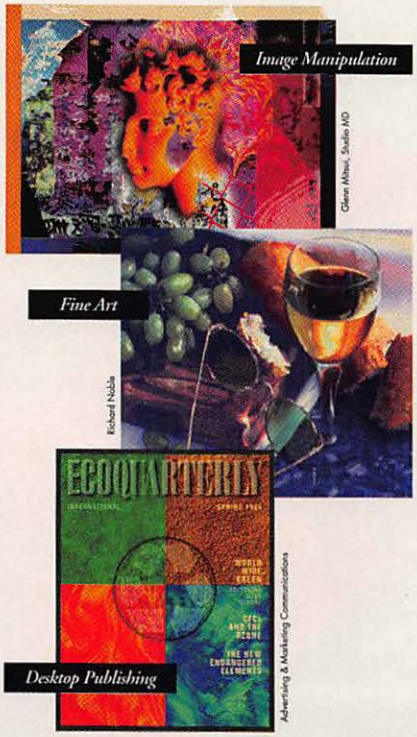
For more information or to order call:

800.553.7070

PINNACLE MICRO
THE OPTICAL STORAGE COMPANY®
19 TECHNOLOGY • IRVINE, CA 92718, USA • (800) 553-7070 • INT'L (714) 727-3300 • FAX (714) 727-1913

Trademarks: Tahoe 230 of Pinnacle Micro, Inc. All trademarks and registered marks to their respective owners.

Circle 178 on reader service card



One Program. So Many Applications.



Fractal Design Painter® 2.0. Not just an award-winning paint program – it's also a powerful, professional-level graphics tool that can add stunning, *Natural-Media*® effects to virtually everything you do on your Macintosh® or Windows™ PC. And, it's the perfect complement to the applications you work with now, including Adobe Photoshop,™ QuarkXPress,® and Macromedia Director.®

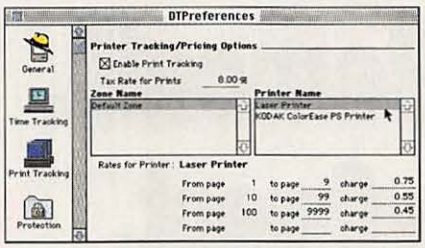
Painter 2.0 has been totally upgraded with more than 70 new brushes, textures and other improved features. Which means now you can do it all – from complex image retouching to photo design to special 3D effects. And thanks to its simplified, intuitive interface, Painter 2.0 is easier than ever to work with.

All this from Fractal Design, the world leader in multi-platform professional creativity tools. Call **1-800-297-COOL** today and find out why Painter 2.0 isn't just for painters anymore.

FRACTAL DESIGN CORPORATION

©1994 Fractal Design Corporation. All rights reserved. Fractal Design Painter and Natural-Media are registered trademarks of Fractal Design Corporation. All other trademarks are the property of their respective holders.

Circle 190 on reader service card



Paying for Pages KansasBay Systems' DeskTracy lets you track and bill for the use of your printers. This screen shows a pricing structure for laser-printer output with quantity price breaks.

control panels that do the monitoring, as well as programs that let you create reports on window usage and configure the control panel to omit certain windows from the logging process. (After all, do you really need to know how much time you spend in the Finder?)

Coral Research also offers SlipMinder, a window-monitoring utility that uses Apple events to transfer window-use information into Timeslips III and LapTrack. This utility eliminates the need to manually invoke these programs' timers when tracking your time on the Mac.

The Apple events support in Timeslips III and LapTrack means you can create your own links to these programs with any application or utility program that also supports Apple events. For example, you might use CE Software's QuicKeys to create a keyboard shortcut that automatically begins or ends a timing session. If you're a consultant creating customized FileMaker Pro or Microsoft Excel templates, you might use Apple events to automatically retrieve a client's time-slip data when you type the client name into a field or cell.

Finally, if you're a QuarkXPress user and want to track only how long you work in that application, consider Trias Development's Time Logger, a Quark XTension that records the time spent working on an XPress document. It's available through the XTensions clearinghouse XChange (303/225-2484, 800/788-7557).

WHERE TO BUY

Components Job Cost/ Time Billing 1 $1495; **Project Billing 1.6** $195; **Legal Billing II 2.6** $295; Satori Software; 206/ 443-0765.

DeskTracy 2.3 one user $149, five users $495, ten users $695; **DeskWatch 1.0** (price not set at press time); KansasBay Systems; 510/268-8100.

DesignSoft Time & Billing 1.87 $149.95; DesignSoft; 708/ 858-5363, 800/426-0265.

Shortlist 1.0.1 $99; Brainchild; 513/831-8451.

TimeLog 2.0 $149; **SlipMinder 1.0** (less than $100—price not set at press time); Coral Research; 702/831-9346.

Time Logger 1.2 $49; Trias Development; available through XChange; 303/225-2484, 800/ 788-7557.

Timeslips for the Mac 2.1k one user $299.95; network edition, five users $699.95; **LapTrack for the Mac 1.0g** $79.95; **Timeslips Accounting Link 1.1** $79.95; Timeslips Corporation; 508/768-6100, 800/ 285-0999.

WindoWatch 1.55 one user $149, five users $449, ten users $749; ASD Software; 909/ 624-2594.

Watch Your Printer, Too

Window-watching utilities are also potentially useful for service bureaus, college computer centers, copy shops—any organization that rents Mac time by the hour. But such groups also need to keep track of who's printing what on which printer so they can charge for the output. KansasBay Systems' DeskTracy tracks network printer use and tallies up charges. You can even specify different per-page rates for different printers—for example, a low rate for black-and-white printing and a higher rate for color output—and establish discount rates for multipage jobs (see "Paying for Pages"). DeskTracy can also track Mac time, although it tracks only the total amount of time someone spends at a given machine—not the time spent in various applications or documents. The utility also provides security features that can lock folders to prevent anyone from copying, changing, or trashing their contents. DeskTracy is a must-have for any organization that needs to control and charge for access to its printers but can't afford to hire a security guard to watch over them.

KansasBay Systems is also working on DeskWatch, a time-billing application that will combine window-watching features with manual time logging. The program should be available by the time you read this. **m**

Contributing editor JIM HEID has been writing about the Mac since its introduction. His latest books are *Macworld Complete Mac Handbook Plus CD* (1993) and *Macworld Word 6 Companion* (1994), both published by IDG Books Worldwide.



Missions don't get much more critical than this. Motorola® is currently developing the IRIDIUM™℠ System, a massive cellular communications system involving a constellation of 66 satellites orbiting the earth. Equally critical is the massive amount of documentation required to get the IRIDIUM System off the ground. And naturally, Motorola selected the best tool for the job: FrameMaker.® FrameMaker delivers exactly what Motorola needs for all their hardware and software documentation. The ability to easily integrate text, charts and graphics in long, structured formats. On-line document distribution with hypertext capabilities for fast and easy access to technical information. And multiplatform capabilities for file compatibility across the PCs, Macintoshes, and UNIX workstations on site, as well as remote access from systems all over the world. Now imagine what FrameMaker can do for your business. Call *1-800-U-4-FRAME Ext. 613* today for our comprehensive Guide To Document Publishing with FrameMaker 4. And see what FrameMaker can accomplish with your mission critical documents.



Frame®

© 1994 Frame Technology Corporation. All rights reserved. Frame, FrameMaker, Frame Technology, and the Frame logo are registered trademarks of Frame Technology Corporation. IRIDIUM is a trademark and service mark of IRIDIUM, Inc. Other brand or product names are trademarks or registered trademarks of their respective companies. In Europe, call (353) 1-842-9866.

Presentation Software That Delivers

SEVEN PROGRAMS THAT HELP YOU MAKE AN IMPACT

Unless you speak in public on a regular basis or you're a natural extrovert, the prospect of standing before an audience for half an hour can be daunting at best and sheer terror at worst. Your Mac can't help you sleep soundly the night before you go on stage, but with good presentation software it can help you prepare for your talk. Whether you're selling an idea to 5 midlevel managers at your company or addressing 500 colleagues in a convention hall, presentation software allows you to organize your thoughts and gives your audience something to look at besides your sweaty brow.

I tested four traditional presentation programs—CA-Cricket Presents III 1.0, Symantec's More 3.1, Microsoft PowerPoint 3.0, and Aldus's Persuasion 3.0—to see how they handle organizing slides, text, and graphics; creating charts; and giving on-screen presentations. I also looked at three programs designed for various kinds of graphics work but that include some presentation capabilities: chart animator Astound 1.01 from Gold Disk, graph master DeltaGraph Pro 3.0.3 from DeltaPoint; and the new integrated-graphics entry ClarisImpact 1.0 (see "When Presenting Is Only Part of the Picture").

How Presentation Software Helps

So few people make a career out of presenting, and so many of us are required to do it occasionally, that presentation programs must appeal primarily to an audience of casual users. If you're a casual user yourself, a brief explanation of what a presentation program can do for you is in order.

You typically begin by organizing your speech into an outline, which the program automatically converts into slides, apportioning one slide to each major outline topic and creating subtitles and bulleted lists from subtopics. The program can format text and add graphic embellishments based on templates that come with the package or that you create. If your presentation involves numerical information, you can create graphs. When you finish designing your presentation, you can produce overhead transparencies or 35mm slides, or show the presentation directly from a computer using a large-screen projection device. You may also want to print handouts for your audience.

The four traditional presentation programs—Presents III, More, PowerPoint, and Persuasion—offer basic functions to meet the above demands, but they vary dramatically in ease of use and flexibility.

Ease of Use Because few of us use these programs regularly, we need some help slogging through the interface. Currently Persuasion is the easiest to use—it brings a new element of hand-holding to creating presentations. After you launch Persuasion and create a new document, the program automatically fashions a slide, complete with a dummy title, subtitle, and bulleted list, based on the default template design. As you click on the dummy text, Persuasion highlights it so you can immediately replace it.



JEFFREY PELO

But while Persuasion now leads the pack in ease of use, PowerPoint may best it before the year is out. Already available for Windows and scheduled to ship this summer for the Mac, PowerPoint 4.0 will include Excel-type "Wizards" to help you structure your speech and select and customize templates.

Flexibility No one creates a presentation right the first time, so you need to be able to conveniently reorganize, reword, and redesign your slides. All four programs provide a master layer for creating and positioning repeating background elements such as logos and conference titles. All but More provide a thumbnail slide-sorter view for quickly changing the order of slides, and all but Presents III allow you to adjust titles, subtitles, and bulleted items in your slides as easily as editing text in the outline view.

Presentation programs make it easy to change backgrounds, reformat text, and adjust the location of charts and other graphics by simply applying a new template. This gives you the option of experimenting with layouts and designs without committing yourself. You can also experiment with color schemes that affect all aspects of your presentation. One minute the background is black, the text is yellow, and the chart is green; apply a new color scheme and the background becomes navy, the text white, and the chart red. The colors in each scheme are designed to work in harmony, a real bonus if you're in a hurry to slap together something attractive.

CA-Cricket Presents III 1.0

by Deke McClelland

Despite a recent face-lift, Presents III lags considerably behind the competition. It lacks an integrated outliner: you create your outline using a separate utility, Portfolio Systems' Dyno Notepad (which comes with Presents), and then import the outline, but you can't edit and dynamically apply the changes to your slides. Templates are similarly crippled. You can apply a template to format an outline as you import the outline into Presents, but you can't use a template to reformat text and reposition charts in an existing presentation.

At $129, Presents III lists for much less than More ($395), Persuasion ($495), or PowerPoint ($395). But inexpensive doesn't mean easy. Presents III greets you with a blank, ten-page document when you start the program, a distinctly unfriendly sight for the uninitiated, and the program is rife with strange limitations—for example, you can't create tables when working in a reduced view, you can't cut and paste values inside the

Quick Show of Hands: How Presentation Packages Compare

	TRADITIONAL PRESENTATION PROGRAMS				SPECIALIZED SOFTWARE WITH PRESENTATION FEATURES		
	CA-Cricket Presents III 1.0	Microsoft PowerPoint 3.0	More 3.1	Persuasion 3.0	Astound 1.01	ClarisImpact 1.0	DeltaGraph Pro 3.0.3
General							
Company	Computer Associates International	Microsoft Corporation	Symantec Corporation	Aldus Corporation	Gold Disk	Claris Corporation	DeltaPoint
Phone	516/342-5224	206/882-8080	408/253-9600	206/622-5500	408/982-0200	408/727-8227	408/648-4000
Toll-free phone	800/225-5224	800/426-9400	800/441-7234	○	800/982-9888	800/544-8554	800/446-6955
List price	$129	$395	$395	$495	$399	$399	$195
Slide Construction							
Integrated outliner	○	●	●	●	●	○	●
Slide sorter	●	●	○	●	●	●	●
Automatic templates with placeholders	○	●	●	●	●	●	●
Multiple layouts per template	○	○	○	●	●	○	●
Global color-scheme control	●	●	○	●	○	○	●
Multiple color schemes per slide	○	○	○	●	○	○	○
Publish and subscribe	●	●	○	●	●	●	●
Import file formats	AIFF, ASCII, EPS, MacPaint, PICT, QuickTime, Scrapbook, SND, SYLK	ASCII, EPS, MacPaint, PICT, QuickTime, TeachText, TIFF, WKS, Word	ASCII, EPS, MacPaint, MacWrite, PICT, TeachText, Word, WordPerfect, WriteNow	Acta, AIFF, ASCII, EPS, Excel, More 1.1, Photo CD, PICT, QuickTime, Scrapbook, SND	1-2-3, Animation Works, ASCII, BMP, EPS, Excel, GIF, PCX, Photo CD, PICS, PICT, QuickTime, SND, TIFF	ASCII, CGM, DIF, EPS, Excel, GIF, MacDraw, MacPaint, MacWrite, PICT, QuickTime, RTF, SYLK, TIFF, Word	ASCII, EPS, Excel, JPEG, PICT, QuickTime, SND, SYLK, TIFF, Trapeze, WKS
Export file formats	PICT, QuickTime, Scrapbook	RTF, Scrapbook	same as import formats	Acta, ASCII, More, PICT, Scrapbook	PICT, QuickTime	CGM, EPS, MacDraw, PICT	ASCII, EPS, Illustrat PICT, Scrapbook
Text and Graphics							
Manual kerning	●	○	○	○	●	○	○
Style sheets	○	○	●	●	○	●	○
Search and replace	○	●	●	●	●	●	○
Editable drop shadow	○	○	●	●	●	○	●
Table editor	●	○	●[1]	●[2]	●	●	●
Equation formatter	○	●[2]	○	○	○	○	○
Number of drawing tools	10	29	6	8	20	27	11
Arrowhead editor	○	○	○	●	●	●	●
Graphic rulers/graphic guides	●/●	○/●	●/○	●/●	●/○	●/○	●/○
Radial gradations/shape gradations	●/○	○/●	●/●	●/●	●/●	●/●	●/●
Charting Capabilities							
Provides formulas	○	○	○	●	○	●	●[3]
Org charts/flowcharts	○/○	○/○	●/○	●/○	○/○	●/●	●/○
Time lines/calendars	○/○	○/○	○/○	○/○	○/○	●/●	●/○
Pictographs	○	○	○	●	●	●	●
Hi-low-open-close charts	○	○	○	●	●	●	●
Histograms	○	○	○	●	○	○	●
Polar charts/radar charts	○/○	○/○	○/○	●/●	○/○	○/○	●/●
Contour map/3-D surface map	○/○	○/○	○/○	●/●	○/○	○/○	●/●
Perspective spatial controls	○	●	○	●	○	○	●
Fill chart elements with gradations	○	○	●[4]	●	○	●	●
Chart animation	○	○	○	●	●	○	○
On-Screen Presentations							
Mac/Windows run-time utilities	●/○	●/○	○/○	●/●	●/●[5]	○/○	○/○
Number of transition effects	42	45	23	15	60	2	33
Automated build function	○	●	●	●	●	●	○
Animation effects	○	●[6]	○	●	●	○	○
QuickTime movies/sounds	●/●	●/○	○/○	●/●	●/●	●/○	●/●
On-screen slide annotation	○	●	○	●	●	○	○

● = yes; ○ = no. [1] Separate application. [2] Linked OLE utility. [3] Select from dialog box. [4] Not all elements. [5] Saves as self-running application. [6] Flying bullets only.

charting table, and you can apply gradations only to entire slides or backgrounds.

Presents III's main advantage over its predecessor, Presents 2.1, is the ability to import and play QuickTime movies and sound. These functions are of no use unless you're a multimedia enthusiast creating on-screen presentations, in which case you will gravitate toward more full-featured programs such as Persuasion and Astound.

More 3.1

Despite having gone for years without a significant upgrade, More 3.1 manages to keep up better than Presents III. More includes an integrated outliner—no surprise since outlining was originally More's primary function—and you can automatically reformat and reposition text and charts by switching templates (for more on More's strengths as an outliner, see "Smart Thinking," *Macworld*, May 1994). When playing presentations on screen, More lets you create automated builds with each bulleted item appearing in sequence and with the transition effects of your choosing. You can also run More presentations on two screens—one for your audience that shows only the slides, and one for yourself that includes your speaker's notes.

Where More shows its age is in the charting department. More Graph is a separate utility with no live links to More, so editing charts is inconvenient. And More Graph can produce only the most rudimentary charts, including bars, lines, and pies.

More lacks other useful functions as well, such as a slide sorter and global color-scheme control. And while More is in need of an update, it is unlikely to get one. At press time, Symantec had no plans to release a PowerPC-native version of More or upgrade the current 680X0 version. So, while More is adequate in many respects, and certainly more capable than Presents III, there's no sense in investing in a program that lacks even a potential upgrade path.

Microsoft PowerPoint 3.0

PowerPoint 3.0 provides everything you expect from presentation software, including a built-in outliner (see "Organizing Your Thoughts"), automated templates, and a color-scheme function. PowerPoint goes a step further by walking intrepid users through the daunting process of designing custom color schemes. After you select a background color, PowerPoint suggests several complementary text colors (see "Coordinated Colors"). Based on the text color you select, the program suggests several palettes that go well with both background and text. With faith in Microsoft's designers, you can't go wrong.

Like More's, PowerPoint's graphing capabilities are sectioned off into a separate utility, but they are linked via Object Linking and Embedding (OLE). This allows you to edit charts and dynamically update them in the slides. Furthermore, if you use Microsoft Word or Excel, you can establish hot links to text or data from these programs. It's one happy OLE family.

For displaying finished presentations on screen, PowerPoint takes the best from Presents III and More and throws in a few tricks of its own. Like Presents, PowerPoint plays QuickTime movies. Like More, PowerPoint lets you create automated builds. But PowerPoint goes More a couple better, letting you specify the duration of transition effects and animate bullets by having them fly onto the screen. And if you like to doodle while you talk, you can annotate slides by actually drawing on them with the on-screen equivalent of a yellow highlighter.

Persuasion 3.0

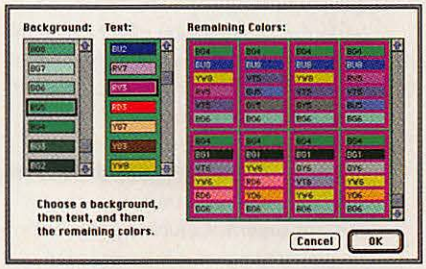
Persuasion matches PowerPoint's current capabilities and goes a few steps further. Instead of applying one color scheme to a slide at a time, you can maintain several color schemes—for example, one for color display, a second for gray scale, and a third for black-and-white output. Better still, you can apply different fill patterns to every element on every slide in each mode, fine-tuning your handouts without sacrificing the vibrancy of your slides or on-screen effects.

Persuasion 3.0's charting capabilities have been completely revamped. Persuasion now includes a separate OLE-linked graphing utility that completely eclipses the competition. Most helpful is the preview system, which demonstrates what the chart will look like after you modify it with commands and options. The data sheet's support for formulas means you can perform calculations without resorting to a separate dialog box or calculator. And of any program in this article, Persuasion provides the best controls for editing charts. The spatial controls for editing 3-D charts are especially satisfying, enabling you to rotate, zoom, pan, and change perspective with immediate feedback (see "Swiveling Charts").

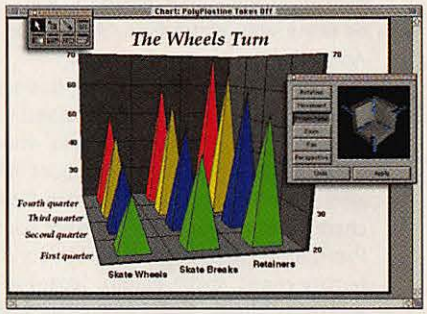
Persuasion offers the best on-screen options of any program except Astound. You can assign objects to different layers, which gives you great control over builds and other sequences as well as transitions and simple animation effects. This means you can fade text and graphics on screen in any order. Persuasion improves on PowerPoint's slide annotation by letting



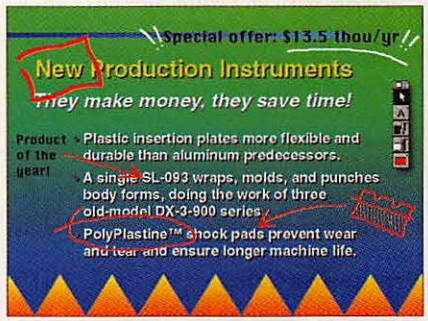
Organizing Your Thoughts PowerPoint's outliner lets you sketch out the main points in your presentation and fill in the details. Every major headline translates to a new slide; lesser headlines become bulleted items. You can even promote and demote headlines and move entries between slides simply by dragging items to different locations.



Coordinated Colors PowerPoint makes selecting attractive color schemes almost automatic. When you select a background color from the 90 available (left), PowerPoint makes only appropriate complementary colors available for text (middle), and then limits choices for other colors to appropriate palettes.



Swiveling Charts Persuasion's charting module lets you create spectacular three-dimensional charts that you can rotate, zoom, and pan dynamically from a floating palette. You can also format text on the fly and move chart elements around by dragging.

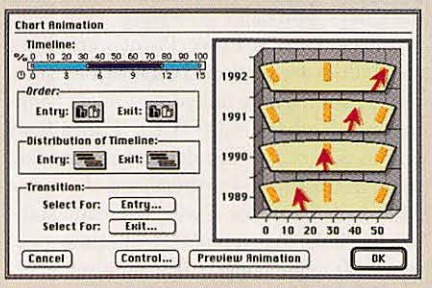


Take Note Persuasion's Player utility lets you annotate on-screen presentations using pencils, erasers, text tools, and an eight-color palette. You can save the markings with the file and edit them later.

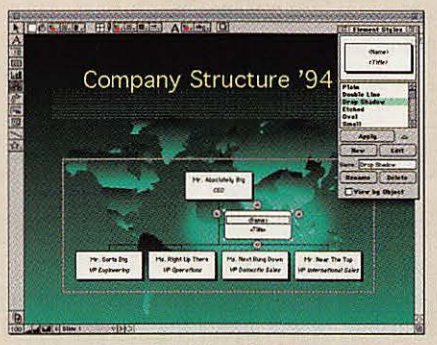
Not everyone needs a traditional presentation program, and some people have specific requirements that Persuasion and PowerPoint simply don't address. Both programs, for example, lack chart-animation capabilities, scientific charts, and integrated graphics functions. These sorts of features are unnecessary for many people who give presentations, but if they're on your list, other products might provide the capabilities you need.

Astound 1.01 For presenting on a large-screen monitor or projection device, Astound is ideal. In addition to the usual stable of slide-production and basic charting options, Astound is packed with animation effects. Its templates can set up amazing animations of text and graphics without your so much as selecting an option.

While Astound's charting is nowhere near as comprehensive as Persuasion's, its chart-animation capabilities are superb. Columns grow out of the horizontal axis, pie wedges fan out into thick slices, and lines draw themselves up and down across the chart. For something even more interesting, experiment with Astound's pictographs. The program includes several animated clip-art sequences for charts, including banners ascending a flagpole and glasses filling with water (see "Automatic Animation").



Automatic Animation Astound provides a handful of animated pictograph templates ready to attach to your data. In this gas gauge example, the arrows move from left to right to match values in the spreadsheet.



Organize Your World ClarisImpact surrounds the active box in an org chart with arrows that add a new manager, coworker, or subordinate with one click, so you're not required to map out the management structure in an outliner and then import it into a chart.

DeltaGraph Pro 3.0.3 Business types aren't the only presenters on earth. Scientists, statisticians, and engineers also have to stand up and speak. And when they do, they're frustrated by the lack of charting options in most presentation packages. Even Persuasion can't match DeltaGraph Pro's variety of chart types. OK, so it can't animate your charts, but DeltaGraph Pro is alone in supplying Pareto-style histograms, triangular ternary charts, spider graphs, Japanese-style candlestick charts, and many others. And if you're overwhelmed by the number of charts available, you can consult the new Chart Adviser, which makes suggestions based on parameters you select.

DeltaGraph Pro 3.0 provides many more presentation functions than its predecessor, including global color schemes and a built-in outliner, bringing it up to speed with PowerPoint 3.0 and even occasionally surpassing it. For example, DeltaGraph Pro is the only program besides Astound that lets you copy text and graphics by dragging and dropping them from one open window to another. But perhaps my favorite new DeltaGraph feature is its list price of $195—less than any other product in this article except Presents III, and worth every penny. Even though DeltaGraph Pro is primarily a graphing package, it earns my vote as the best presentation value on the Mac.

ClarisImpact 1.0 The best way to describe ClarisImpact is as an integrated business-graphics package. Equal parts drawing, desktop publishing, and presentation program, Impact is designed to get new users in the door. To create an organization chart, for example, you simply click on or drag arrow icons to add assistants, subordinates, coworkers, and managers (see "Organize Your World"). ClarisImpact brings this straightforward approach to bear on flowcharts, time lines, and a calendar maker. Who doesn't mention a date or two when making a presentation?

As a straight presentation program, ClarisImpact compares more favorably to Presents III than to Persuasion. Though it supplies the obligatory slide sorter and automated templates, it lacks an outliner, so you have to create your presentation one slide at a time. Also, you can't change the color scheme for your presentation globally, except by introducing a new template, and ClarisImpact's collection of templates is paltry.

Luckily, ClarisImpact's array of general business-graphics capabilities and its straightforward creation options easily make up for some interface complexities. In fact, if I had to select a graphics program—with or without presentation features—to recommend to a nonartist, this would be the one.

you write with any color, not just yellow; supplying a variety of tools, including a text tool and eraser; and allowing you to save your annotations (see "Take Note"). Finally, you can create buttons that jump to specified slides in your document for use in self-running demos and electronic kiosks, or simply for making your own presentations more intuitive and flexible.

Persuasion Wins

Supplying the most features, the friendliest interface, and the best charting module, Persuasion is the clear champion among traditional presentation packages. PowerPoint ranks a close second, however, which brings up an interesting question: If you already own Microsoft Office—which includes PowerPoint—should you also purchase Persuasion? Or is PowerPoint sufficient? Much as I like Persuasion, the truth is that most folks will find PowerPoint more than satisfactory. And if you're willing to wait, PowerPoint 4.0 promises to wow even Persuasion fans. For more on 4.0, see *At Work* news in this issue. m

Contributing editor DEKE McCLELLAND has recently given presentations at the Photoshop Conference in San Francisco, at Macworld Expo in Tokyo, and at Photocomp in Miami.

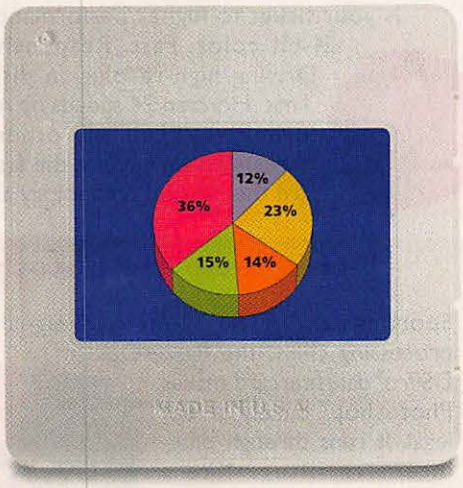
PRESENTATION SOFTWARE

MW EDITORS' CHOICE

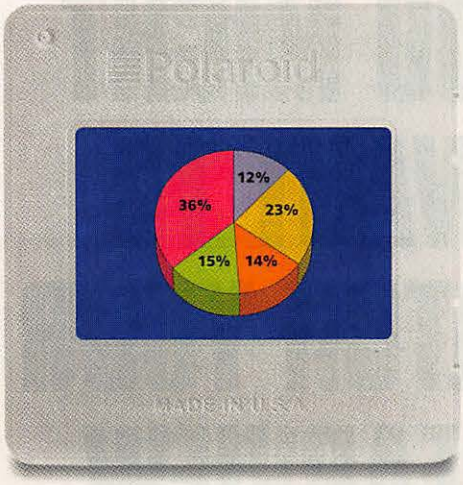
We evaluated presentation products for ease of use and depth of features.

Persuasion 3.0 With its revamped interface, great slide control, vast charting capabilities, and on-screen multimedia options, Persuasion is the best overall. **Company:** Aldus Corporation. **List price:** $495.

MAYBE YOUR SLIDE HOUSE SHOULD GET A SMALLER PIECE OF THE PIE.



$20, 12 hours.



50¢, 4 minutes.



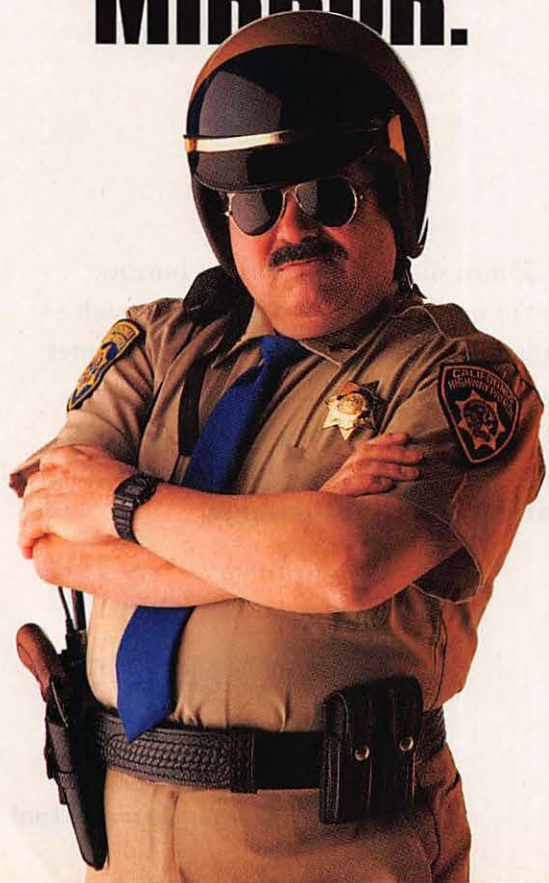
If you're paying rush charges for 35mm slides from a service bureau, you're paying too much. Even if you're not, you're still paying too much — unless you're using the Polaroid Digital Palette 35mm desktop slide printer. Slide for slide, it's the same quality but 10 to 40 times less expensive. And 10 to 100 times faster. Making the slides is as easy as pie, too — just a few mouseclicks with your computer. Give the Digital Palette slide printer a try. And give your slide house their just desserts.

For a free interactive demo diskette on this award-winning technology, call 1-800-662-8337, ext. 963.

Polaroid

Circle 295 on reader service card

GRAPHICS ACCELERATION SO FAST, YOU MIGHT WANT TO WATCH YOUR REARVIEW MIRROR.



Get in the fast lane with Horizon 24™ and satisfy your need for speed!



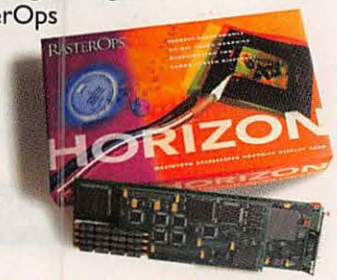
When manipulating 24-bit color images on large-screen displays, the last thing you need is another delay. But even the most powerful Macintosh® suffers bottlenecks.

That's why Horizon 24 from RasterOps is your ticket to higher performance 24-bit color. Fast. Responsive. Driving high-resolution displays to the limit. Horizon 24 speeds up more graphics primitives than any other Macintosh accelerator, making it the fastest graphics card the state of technology allows.

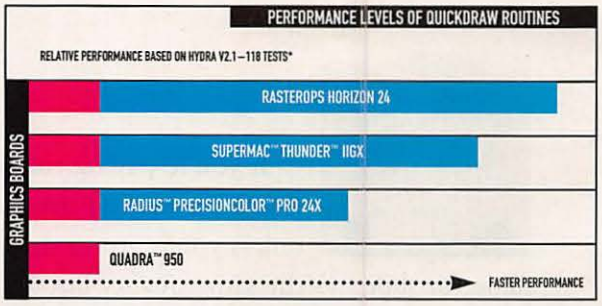
Accelerated for Power Macintosh

Doing time in Photoshop?

Sporting twin AT&T 3210 digital signal processing chips, the RasterOps DSPro™ daughtercard makes Photoshop™ barely street legal. It runs through time-intensive filters like a trooper, assuring you of optimum performance in Photoshop.



So get out of the slow lane. Call **1-800-SAY-COLOR** for more information or the location of a dealer near you.



RASTEROPS®

2500 Walsh Avenue • Santa Clara, California 95051

©1994 RasterOps Corporation. All rights reserved.
RasterOps and the RasterOps logo are registered trademarks; Horizon and DSPro are trademarks of RasterOps Corporation, and all other trademarks and tradenames are property of their respective owners.
*Results based on tests run on a Quadra 950 with available products as of 2/1/94.

Circle 90 on reader service card



BY LON POOLE

Quick Tips

Tips, Tricks, and Shortcuts

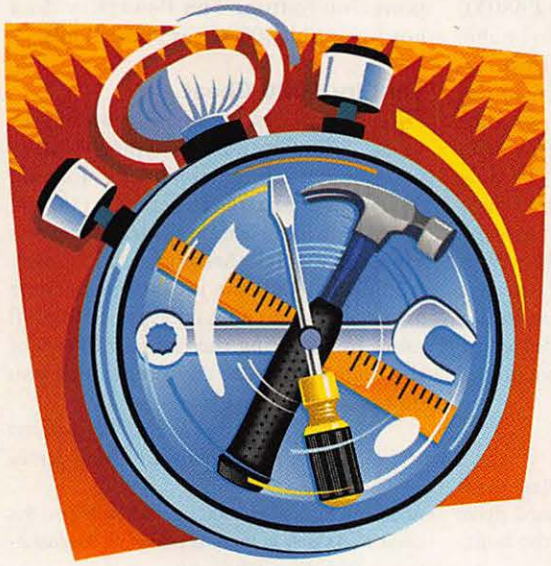
QUICKMAIL LETS YOU USE ADDRESS books to simplify the addressing of messages, but QM Remote doesn't automatically update your address books when you use it to send and receive messages by modem. If you need to send a message with QM Remote to someone whose address is not in your address book, have that person send you a message (which can even be blank). Then simply reply to that message, and QM Remote will fill in the correct address.

You can also use QM Remote to copy and paste addresses to your address books from memos you receive. Here's how: Click the address area of a memo that contains one or more addresses you want to copy, bringing up the addressing dialog box. In that dialog box click the From List button to bring up a dialog box that lists the addressing history of the message (the originator of the message along with all the people who forwarded the message before it reached you). Select one or more of the listed addresses (shift-click or shift-drag to select multiple addresses) and click the Copy button. Dismiss the dialog box by clicking its OK button, and dismiss the addressing dialog box by clicking its Cancel button. Then choose Address Books (⌘-G) from the Mail menu, select the address book to which you want to add the copied addresses, click the Edit button to open the selected address book (or double-click it), and press ⌘-V to paste the copied addresses. Put away the address book by clicking its OK button, and dismiss the address-book-selection dialog box by clicking its Done button.

At any time, you can install an entire address book copied from a Mac that's directly connected to the local network (for example, with LocalTalk, Ethernet, or Apple Remote Access) by dragging the copied address book file to your Address Books folder. The path to that folder is System Folder : Preferences : QuickMail Stuff : Address Books. You can, for example, copy an address book from a networked Mac to a floppy disk or have someone connected to the network enclose it with a QuickMail memo.

Updates

After reading my suggestions in February's *Quick Tips* for graphing mathematical equations, several readers wrote to recommend additional applications. Gerald L. Gottlieb of Chicago uses KaleidaGraph ($155 direct; Synergy Software, 215/779-0522) and notes that DeltaGraph Pro ($129.95 direct; DeltaPoint, 408/648-4000, 800/446-6955) and CA-Cricket Graph ($129 direct; Computer Associates International, 516/342-5224, 800/225-5224) would work too. He says they can plot almost any kind of function (DeltaGraph Pro even has some 3-D capabilities) and let you have fancy axes, grids, labels, and so on. Patrick J. Boyle of Sebastopol, California, finds that PSMathGraphsII ($79.95 direct; Mary Ann Software, 415/662-2486) provides the kind of control a mathematician or scientist needs for producing publication-quality mathematical art. PSMathGraphsII constructs graphs with Bézier curves rather than lots of tiny line segments (the method Wolfram Research's Mathematica uses) and can output a PICT graphic with embedded PostScript (which you could paste into a word processing document) or output a PostScript file (which a page-layout program or a PostScript draw program can import).



In response to my advice in April's *Quick Tips* about connecting two Macs for file sharing, several people suggested using an ordinary serial printer cable (such as a StyleWriter or ImageWriter II cable) instead of network connectors and cable. When a tip in May 1992 recommended this kludge for connecting the Mac to a LaserWriter, one reader reported unreliable printing, and a dealer reported seeing several Macs with serial ports damaged by using serial cables for network connections. Therefore, I recommend spending the extra $30 or less that phone-type network connectors and cable cost. The last thing you need when sharing files is unreliable data transfer.

Power Mac Update Worries

Q. I have been reading about Macs with PowerPC chips and am pleased to know that most application programs can be used with the help of an on-board emulator until the software

continues

DON BAKER

PERFECT POLYGONS

The free Stars and Stripes extension (available from most online services and user groups) adds a Starburst tool to the QuarkXPress tool palette. Few people need to make starbursts often—there are only so many times you want to yell *NEW!* or *FREE!*—but Matthew Frederick of Phoenix discovered you can also use the Starburst tool to create perfect stars and polygons. You double-click the Starburst tool to access the Starburst Preferences dialog box, and change the settings in it as indicated here. While drawing with the Starburst tool, hold down the shift key to keep all sides and angles equal.



Five-Pointed Star
5 spikes, 62% spike depth, rotate result 18°

Six-Pointed Star
6 spikes, 42.5% spike depth, rotate result 30°

Pentagon
5 spikes, 19% spike depth, rotate result 18°

Hexagon
6 spikes, 13% spike depth, rotate result 0°

Other Polygons
Same number of spikes as sides, select Reshape Polygon, delete inner starburst points.

companies upgrade their stuff. But will documents created by the new PowerPC version of an application be readable by the latest 680X0 version of the same application? For example, QuarkXPress 3.1 cannot open documents saved by QuarkXPress 3.2 (and both are 680X0 versions).

Kevin Farley
Holly Hill, Florida

A. It will be a year or two before the Power Mac population becomes large enough that developers of mainstream productivity applications can afford to orphan 680X0 Macs. In the interim I expect Power Mac and 680X0 versions of the same application to be able to open each other's files. However, developers whose software benefits most from extra performance—such as publishing and graphics applications—will let 680X0 versions languish sooner, because users of those products will acquire Power Macs earlier than the average Macintosh user. Check *Macworld*'s *Power Mac News* section for information about specific products, and before you acquire a Power Mac you should ask the companies whose PowerPC versions you plan to obtain about file compatibility.

Power Switching

Q. Is it safe to switch off a Macintosh Classic and an external hard drive from a power switch rather than the built-in switches?

Robert Schnitzer
Redondo Beach, California

A. You can safely turn off everything with a power strip's switch after using the Finder's Shut Down command, and most systems work fine if you turn on the power to all devices at once from the power strip. Some hard drive manufacturers recommend switching on the hard drive first and waiting 15 to 30 seconds so it's ready when you switch on your Mac. However, with an internal hard drive, the drive is powered on at the same time as the Mac, a process that works fine. If your system does have trouble starting up when you turn on everything at once, then use the power-strip switch to turn on everything except the Mac, wait a few seconds, and then turn on the Mac.

It's possible to use the power-on button at the top of your keyboard to switch on an entire system (not just the Mac) by plugging everything into a PowerKey device ($119 retail; Sophisticated Circuits, 206/485-7979, 800/769-3773). It works with most Macs that have an ADB port, including Classics, LCs, and other Macs that don't ordinarily respond to the power-on button. The PowerKey does not work with 100-series PowerBooks.

SimCity 2000 Cheat

TIP You can't embezzle money in SimCity 2000 by typing **FUND** as you can in the original SimCity. Instead, type **porntipsguzzardo** to get $500,000 and everything in the Rewards menu (Mayor's House, City Hall, Arcologies, and more). Additionally, all the inventions become available. You can easily get $500,000 more by repeating the last four letters of the code—**ardo**—at any point until you quit or start a new game.

Robert Petrigliano
Montclair, New Jersey

According to SimCity 2000's publisher, Maxis, this cheat works only in the first edition of the Macintosh version of the game.—L.P.

Scanning Ghosts

TIP When scanning a book page using a flatbed scanner (making sure you're not infringing a copyright, of course), you may get ghosting of the text from the back of the page as the light shines through the paper. If you insert a sheet of black paper behind the page you are scanning, it absorbs the light and eliminates the show-through.

Terry Amthor
Washington, D.C.

Trash Everywhere

TIP I keep an alias of the Trash in each corner of my 17-inch monitor and also in certain folders with a high degree of incoming and outgoing files, such as my BBS download folder. I find it convenient to always have the Trash within reach without a window blocking it.

Charles Dill
San Francisco, California

Changing Your Cover

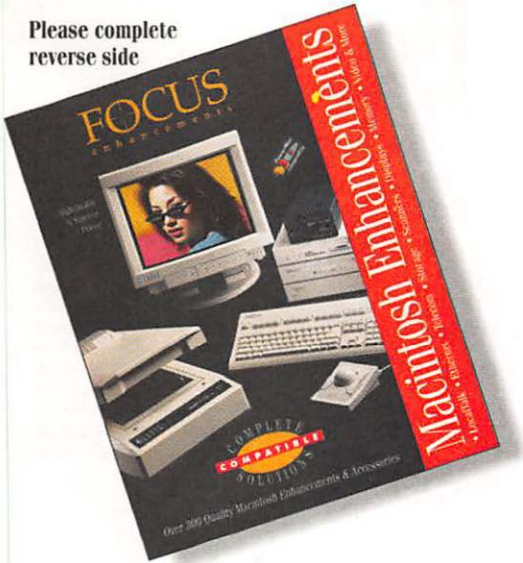
TIP The Fax Center program that comes with Global Village Communication modems is great for making new cover sheets, but it's a pain when you have to correct or change the background graphics in an existing cover sheet. After modifying the graphics in a draw program and saving the result as a PICT file (easy enough), you must import that file as a new cover sheet, reposition all the cover-sheet fields (date, destination, fax number, memo, and so on) one by one, and change the fields' font, size, and style (unless you like Chicago 12, the default for new cover sheets). You can use ResEdit to avoid that hassle.

First make your changes to the cover-sheet graphics with a draw program such as SuperPaint or Canvas, or the graphics module in ClarisWorks. (The folder path to the cover-sheet documents is System Folder : GlobalFax Documents : Cover Sheets.) In the draw program you can see and change the cover-sheet graphics but not the cover-sheet fields. If you move any graphic objects that act as field borders or field labels, you will probably have to adjust field positions later in the Fax Center program (not a big deal). Use the Save As command to save the modified cover sheet in PICT format with a new name, and then close it.

Next open the original, unmodified cover-sheet document in ResEdit. Choose Select All and then Copy from the Edit menu. Close the original document. Then use ResEdit to open the

continues

Please complete reverse side



*Manufactured under patent license from Farallon Computing, Inc.

☑ YES! Please send me my FREE catalog today!

With Over 100 New Products!

Samples of FOCUS' Unbeatable Prices:

Lapis L•TV Portable	**$299.99**
EtherLAN Print	**$279.99**
TurboNet ST LocalTalk Connectors*	**$15.99**
Ethernet Boards for all Macs	*from* **$74.99**
Ethernet SCSI Connectivity Devices	*from* **$199.99**
FaxModems, 14.4 and 24/96	*from* **$85.99**
SyQuest™ Removable Drives	*from* **$299.99**
CD-ROM Drives	**$449.99**

Quality Macintosh Products at Great Prices!

SEND A FOCUS CATALOG TO:

NAME, TITLE

COMPANY NAME

STREET ADDRESS

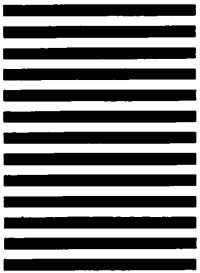
CITY, STATE, ZIP

DAY PHONE (required to receive free catalog)

MWLD 7/94



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



BUSINESS REPLY MAIL

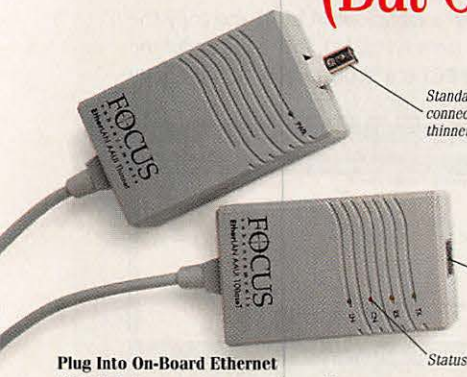
FIRST CLASS MAIL PERMIT NO 84 WOBURN MA

POSTAGE WILL BE PAID BY ADDRESSEE

FOCUS Enhancements, Inc.
800 West Cummings Park
Woburn, MA 01801- 9816



Our EtherLAN Family Keeps Growing.
(But Our Prices Keep Shrinking!)



Incredible! new low price $49.99

COMPARE

Asanté	$85
Dayna	$69

Plug Into On-Board Ethernet

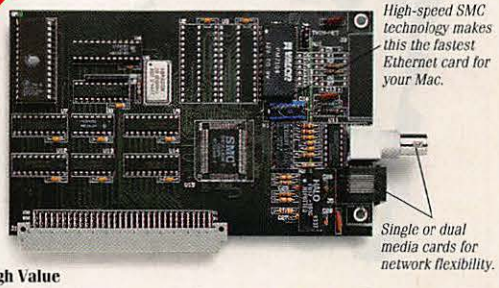
FOCUS Enhancements transceivers allow you to use the on-board Apple Ethernet ports in high-end Macs and Apple printers (AAUI port), so you can take advantage of Ethernet speed without the additional purchase of an Ethernet network interface card. Each model attaches in seconds to a thinnet backbone or versatile 10BaseT network for plug-and-play speed and convenience. The Tr/FN is a single-post thinnet transceiver that comes with a T-connector. The Tr/FN-T, our 10BaseT transceiver, has one RJ-45 connector for standard twisted pair Ethernet connection. Includes a FREE 6-foot 10BaseT patch cord.

Incredible! as low as $74.99

COMPARE

Apple	$103
Asanté	$125

$39 performance application with every EtherLAN card, FREE!



High Speed, High Value

Our EtherLAN boards now have enhanced performance, thanks to new Ethernet technology from SMC. With a new, more efficient driver, they will boost your speeds while maintaining complete compatibility with TCP/IP, DECNet and Netware. Features unique, dynamically-allocated memory, and its own SNMP capability and a means to view network statistics from your Mac. Our auto-sensing dual-media cards allow you to quickly change from one Ethernet media to another without re-installing a board or restarting your Mac. Comes with a great performance measuring application, a $39 value, free!

PowerMac compatible



EtherLAN Hub9 $219.99

COMPARE

Asanté	$369
Dayna	$249

Easy Expansion For Smaller Networks

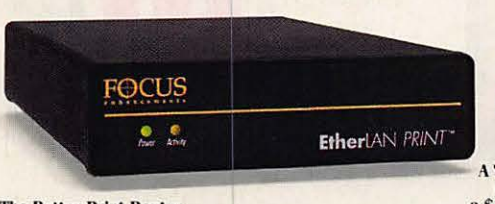
The EtherLAN Hub9 offers the same outstanding features as the Hub16, in a streamlined case that's perfect for smaller networks, workgroups, or expansions of larger networks. Equipped with eight 10BaseT ports and one thinnet port, it also has an extra RJ-45 crossover port for easy cascading of hubs. Like the Hub16, this convenient unit features auto-partitioning and auto-reconnect. Designed for easy, trouble-free use, it's simple to install, and requires no management software.

EtherLAN Hub16 $499.99



Convenience and Value, Times 16

Compare the new EtherLAN Hub16 to other Ethernet hubs – it gives you the best value around, with the features and quality your larger network needs. In one easy-to-use, self-contained unit, the Hub16 provides 16 10BaseT ports and one BNC (thinnet) port. It offers auto-partitioning and auto-reconnect to bring a port back on line quickly once it's clear, and it requires no management software – just connect it and forget it! It installs quickly and easily in offices with an existing 10BaseT wall jack or BNC connection; separate brackets are available for mounting on a standard 19-inch rack.



EtherLAN Print $279.99

COMPARE

Asanté	$458
Dayna	$419

A TurboNet* with any EtherLAN Print – a $15.99 value – FREE!

The Better Print Router

Easily bridge your LocalTalk LaserWriters to an Ethernet network. It works with any brand of LocalTalk-compatible network printer or other LocalTalk devices such as Macs. With a BNC connector for thinnet and RJ-45 for 10BaseT, you have the ultimate in network flexibility. Includes an easy-to-use security and management utility. For a limited time, get a FOCUS TurboNet to connect your LocalTalk line to the EtherLAN Print. One free with any EtherLAN Print purchase. Choose the EtherLAN Print which supports two printers for $279.99 or the EtherLAN Print Plus which supports up to six LocalTalk devices for $399.99.

EtherLAN SC $199.99

COMPARE

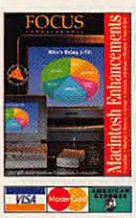
Asanté	$459
Farallon	$359



Ethernet from any SCSI Port

Economical yet powerful, get up to speed and get onto the Ethernet network with the EtherLAN SC or SC-T. Fully compatible with 10BaseT and Thinnet networks, you will be up and running in a few minutes. PowerBooks, Classics, SE, IIsi, LC and others can travel in the high-speed lane at a bargain price. **"Bottom-line Pick"** *— Macworld 2/94*

Over 30 Quality Ethernet Solutions To Choose From. Call FOCUS Enhancements!



To Order And Get Your Free Catalog:

800-538-4888

Resellers And VARs Welcome!

FOCUS enhancements

©1994 FOCUS Enhancements, Inc. All rights reserved. All FOCUS Enhancements products are registered trademarks of FOCUS Enhancements, Inc. All prices, items, and availability are subject to change. All product names are trademarks of their respective holders. All prices verified on April 11, 1994. *TurboNet manufactured under patent license from Farallon Computing, Inc.

Circle 201 on reader service card

Invest a stamp



Save a bundle

For the price of a stamp, you can get the latest edition of the federal government's free **Consumer Information Catalog** listing more than 200 free or low-cost government publications on topics such as federal benefits, jobs, health, housing, education, cars, and much more. Our booklets will help you save money, make money, and spend it a little more wisely.

So stamp out ignorance, and write today for the latest free **Catalog**. Send your name and address to:

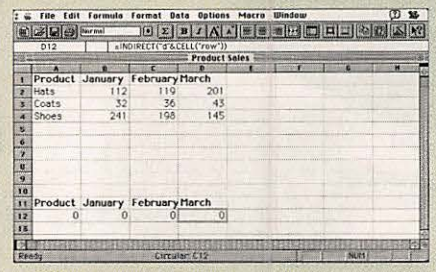
Consumer Information Center
Department SB
Pueblo, Colorado 81009

A public service of this publication and the Consumer Information Center of the U.S. General Services Administration.

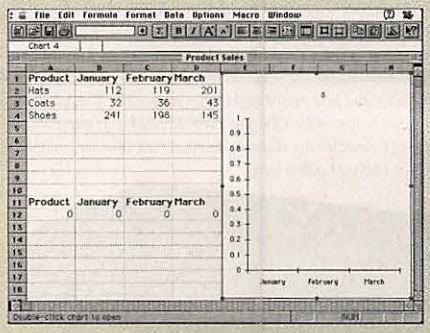
DYNAMIC GRAPHING

You can create a Microsoft Excel 4.0 chart that dynamically changes as you select different lines in a spreadsheet, always graphing the currently selected line. Shane Devenshire of Walnut Creek, California, has devised a simple method that achieves this effect without macros or formula changes. The following steps illustrate this method with a sample table of product-sales figures.

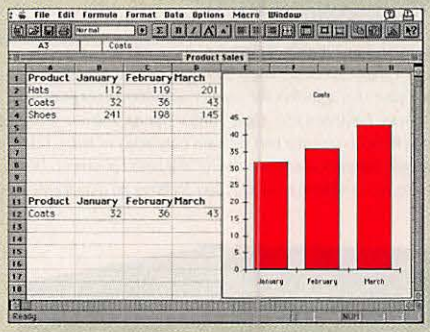
1. Enter the column headings and data in a table (cells A1:D4) and copy the column headings to any available empty area (cells A11:D11). In the cell under the first copied heading, enter the formula **=INDIRECT ("a"&CELL("row"))**. Do not be alarmed if Excel displays a message that it cannot resolve circular references; they are a temporary artifact of this setup step. Copy this formula to the cells under the other headings (cells B12:D12). Change the ***a*** to ***b*** in the first copied formula (cell B12), to ***c*** in the second copied formula (cell C12), and so on.



2. Highlight the copied headings and the formulas (cells A11:D12), click the Chart Wizard button in the tool bar, drag in the spreadsheet to indicate where you want to embed your dynamic chart, and in the Chart Wizard dialog box, click the >> button to create a basic column chart. Alternatively, you can use the Next button in the Chart Wizard dialog box to select a custom chart format (like the one shown here).



3. To see the dynamic chart in action, select any cell in the original data table (in row 2, 3, or 4) and press ⌘–equal sign (=) to calculate now. The chart changes to graph the data from the row in which you selected a cell.



This method demonstrates a little-known feature of the Cell function: omitting the second argument of the Cell function makes Excel use the currently selected cell. This method also illustrates calculating a cell reference and getting the cell's value with the Indirect function.

modified cover-sheet document, and choose Paste from the Edit menu. From ResEdit's File menu choose Get Info for *your document*, and in the dialog box that appears change the Creator item to GVCi (capitalization matters here), thereby identifying the modified cover sheet as a Fax Center document. Save and close the document.

Finally, use the Fax Center program to open the modified cover sheet and adjust the positions of any fields whose labels you changed in the draw program.

Chris Stone
Yamanashi-ken, Japan

We pay from $25 to $100 for tips published here. Send questions or tips on how to use Mac computers, peripherals, or software (by mail or electronically) to *Quick Tips*, Lon Poole, at the address listed in *How to Contact Macworld* at the front of the magazine (include your address and phone number). All published submissions become the property of *Macworld*. Due to the high volume of mail received, we're unable to provide personal responses. m

LON POOLE answers readers' questions and selects reader-submitted tips for this monthly column. His latest book is *Macworld Guide to System 7.1, 2nd Edition* (IDG Books Worldwide, 1993).

The only statistics package you'll ever need.

MACWORLD MW EDITORS' CHOICE

NEW SYSTAT 5.2

"For Mac-based statistical analyses and presentations, choose SYSTAT."
P. Wayner, **BYTE**, 1-92

The most comprehensive and powerful statistics software for Macintosh now provides the most advanced multivariate general linear hypothesis program. Yet it remains the easiest to use–with a friendlier-than-ever interface.

New SYSTAT 5.2 for Macintosh enables you to perform statistical analyses you can't do with any other Macintosh statistics program. It offers more advanced statistical procedures, more types of graphs, and greater data management capabilities.

More statistics, from basics to the most sophisticated

A full range of univariate and multivariate statistics–including multidimensional scaling and nonlinear modeling.

Basics include descriptive statistics, *t* tests, correlations, autocorrelations, simple regression, and frequency tables. With a few clicks you can turn each statistic into a graph.

SYSTAT offers the most advanced multivariate general linear hypothesis program available for Macintosh. SYSTAT can estimate and test any univariate or multivariate model including:

- REGRESSION: simple linear, multiple linear, stepwise, polynomial, mixture, and weighted;
- ANOVA (analysis of variance): one-way, two-way, factorial, nested, unbalanced, post-hoc tests, mixed, repeated measures, split plot, multivariate, means model coding;
- MULTIVARIATE: discriminant analysis, principal components, canonical correlations.

Just point and click

SYSTAT is truly Mac-like. Just point and click: SYSTAT works with the pull-down menus, dialog boxes, icons, buttons and graphics tools you're accustomed to on the Mac.

The most graphics

No other statistical or graphics package can produce all the scientific and technical graphs available on SYSTAT–nor surpass its ease of use. And you can save SYSTAT graphics and data in QuickTime™ movie file formats. Graphics options include:

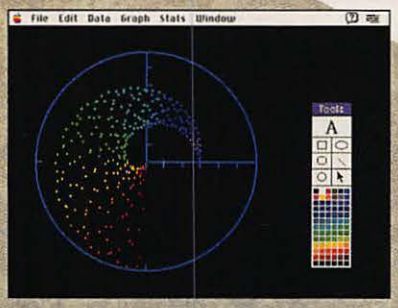
- linear, quadratic, step, spline, polynomial, LOWESS, exponential, and log smoothing
- confidence intervals and ellipses
- scatterplot matrices
- single, multiple, stacked, and range bar graphs
- single and grouped box plots
- stem-and-leaf diagrams
- histograms
- log and power scales
- maps with geographic projections
- Chernoff faces
- pie charts
- contour plots
- control charts
- 3-D data and function plots
- complete color spectrum

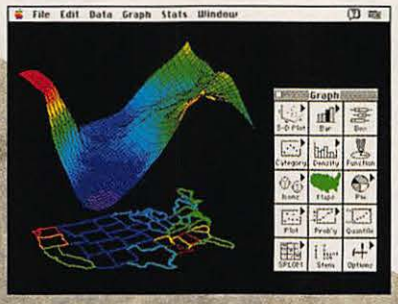
For more information, upgrades, and demo disks phone:

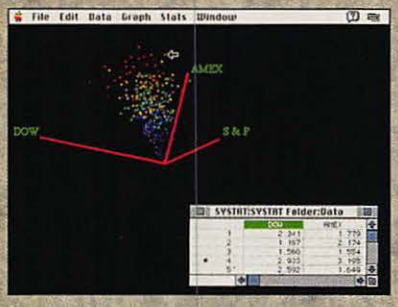
708-864-5670

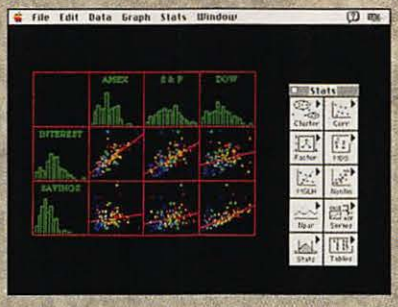
Circle 29 on reader service card

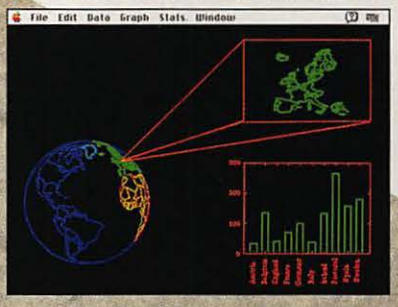










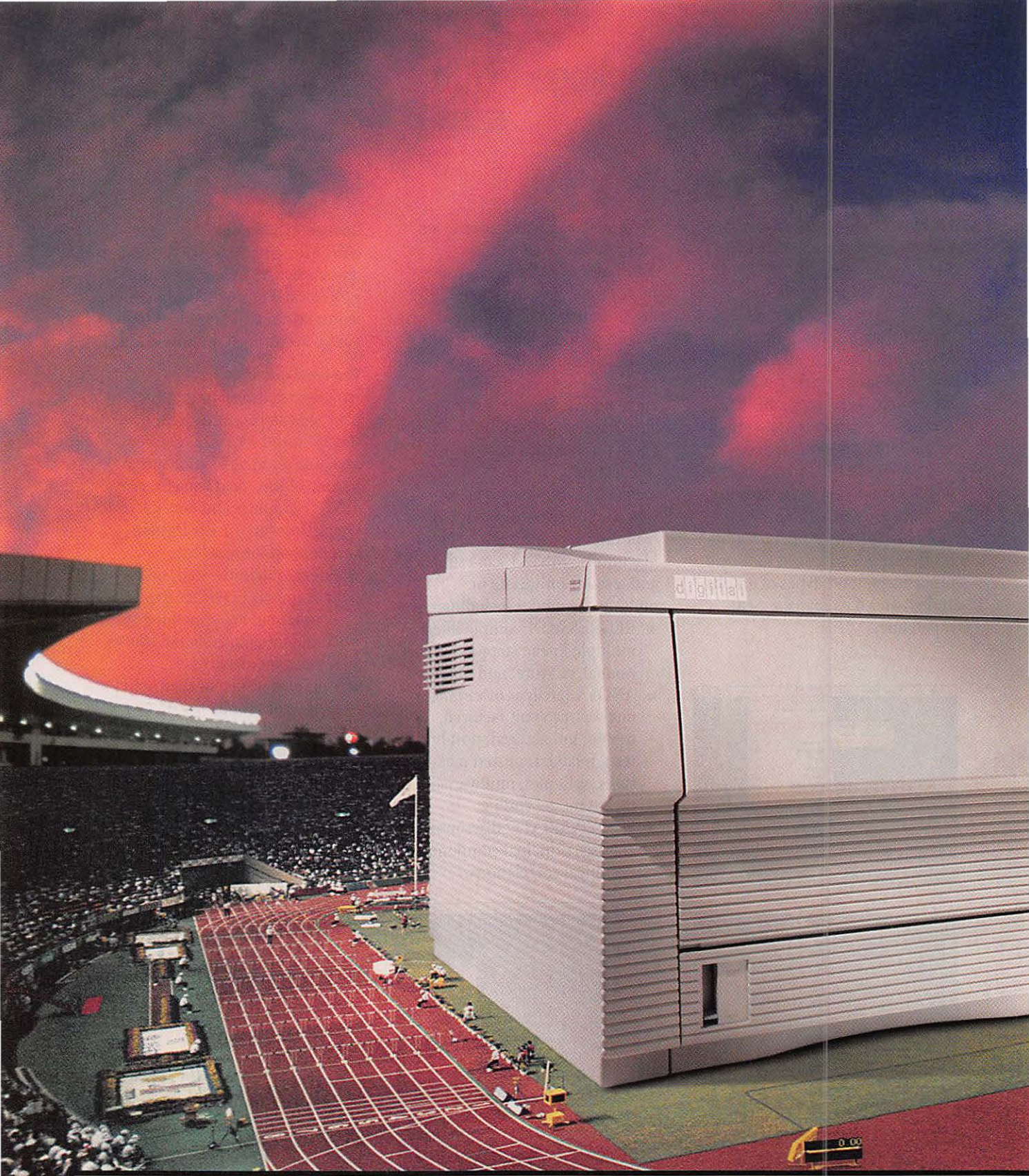


SYSTAT®

For more information call or write: **SYSTAT, Inc.**, 1800 Sherman Avenue, Evanston, Illinois 60201-3793. Tel: 708.864.5670, Fax: 708.492.3567

Australia: Hearne Marketing 61.3.8661766, **Holland:** Oasis 31.34.0266336, **Denmark:** Agrolab 45.64.406575, **France:** Deltasoft 33.76.418508, **Germany:** STATCON 49.55.4272075, **Italy:** PiSoft 39.587.213640, **Japan:** HuLinks 81.33.5902311, **New Zealand:** Hoare Research 64.7.8562675, **Poland:** COMPANION 48.12.360791, **Spain:** AddLink 34.3.4590722, **Switzerland:** Fritschy & Partner 41.31.3125151, **SYSTAT UK:** 44.81.4620093

© 1993 SYSTAT®, Inc.



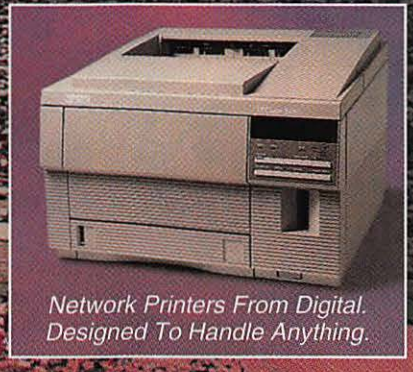
Putting Imagination

Adobe PostScript

A1C © Digital Equipment Corporation. 1994. Digital, DECIaser, and the DIGITAL Logo are trademarks of Digital Equipment Corporation.
PCL is a registered trademark of Hewlett-Packard Company.
PostScript is a trademark of Adobe Systems Inc. AppleTalk is a registered trademark of Apple Computer Inc.

Introducing The DEClaser 5100. The New 600 dpi Network Printer That Can Play On Any Team.

Now, from the leader in network printing, comes an exceptional 8 ppm laser printer offering unmatched performance, high-resolution graphics and expandability. The new DEClaser™ 5100. Designed to handle anything with an all-star line-up of features. Like a RISC processor, graphical coprocessor and Digital's Intelligent Printing System to deliver the fastest first page in the industry. Standard 600 dpi, upgradeable to true 1200 dpi for superb image quality. Simultaneously active serial, bi-directional parallel and AppleTalk® ports, and a built-in network interface slot for multiprotocol Ethernet or Token Ring connectivity. Two PCMCIA Type II slots and a user-installable optional hard disk for additional fonts and forms. Plus EPA "Energy Star" compliance to save you energy and money. How can you get network printing's MVP on your team? Just call 1-800-777-4343 to order your DEClaser 5100 today, or for the name of your local reseller. Outside the U.S., contact your local Digital Sales Office.



Network Printers From Digital. Designed To Handle Anything.

DEClaser 5100 includes:

- 8 ppm, 600 dpi (1200 dpi optional)
- Adobe PostScript® L2 (73 fonts)
- PCL® 5E support (47 fonts)
- RISC and graphical processors
- Serial, parallel and AppleTalk hot ports
- EPA "Energy Star" compliant
- 2 PCMCIA Type II slots
- Optional Ethernet card
- Optional internal hard disk

To Work digital™

Circle 120 on reader service card

NetWare Cachet for Power Mac Servers



STEPHEN DURKE

APPLE'S NEW POWERPC-BASED SERVers waltzed in this spring to the sweet music of promises that Novell's NetWare 4.X will someday run on the blazingly fast RISC-based servers. For the present, however, there is no server software that can take full advantage of the new PowerPC 601 processor used in the Workgroup Servers 6150, 8150, and 9150.

Based on the pizza-box–shaped Power Mac 6100/60, the Workgroup Server 6150 ($4200 to $5000) comes with AppleShare 4.0.2, an upgrade that runs on a PowerPC-based machine. Running the 60MHz PowerPC 601 chip, the WS 6150 comes with 8MB of RAM, with room for up to 72MB. It ships with a 256K RAM cache, a single PDS expansion slot (convertible to a short NuBus slot using Apple's $99 adapter), on-board Ethernet, a CD-ROM drive, a floppy drive, and one 500MB internal hard drive.

Both the Workgroup Server 8150 ($7500 to $10,000) and 9150 ($10,300 to $15,000) use the 80MHz PowerPC 601.

Housed in the same squat case as its AWS 80 counterpart, the WS 8150 comes with 16MB of memory (expandable to 264M), a 256K cache, three standard NuBus90 slots, on-board Ethernet, a CD-ROM drive, a floppy drive, a DAT drive, and a 1GB internal hard drive.

The WS 9150 comes in the improved, tower-style case of the AWS 95 and supports up to eight internal devices. It ships with two 1GB internal hard drives, a CD-ROM reader, a DAT drive, and a floppy drive, with room for three other half-height internal drives. Standard configuration includes 16MB of memory (expandable to 264MB), a 512K RAM cache card, four NuBus90 slots, plus one PDS slot. It also offers a SCSI-2 bus for attaching up to seven external drives. Unlike the AWS 95, however, the 9150 does not offer an accelerated SCSI bus and cannot run AppleShare Pro, the server software that depends on A/UX, which has not yet been adapted to run on the PowerPC chip.

Users of the 8150 and the 9150 will be able to buy NetWare or AppleShare separately. Since AppleShare 4.0.2 depends on elements of the Macintosh Operating System that haven't been converted to native PowerPC code, AppleShare can't now run any faster on PowerPC-based Mac servers than on 68040-based Macs. Apple would not say when native AppleShare would be available.

Novell plans to release NetWare for PowerPC by year's end, with a new Mac client capable of using NetWare 4.X's directory services, something the current Mac client can't do. However, the client will still use AppleTalk (rather than IPX) to access a server that is based on AppleShare Filing Protocol and runs within NetWare for file and print services, meaning that initially Mac clients won't benefit much from the hardware's speed. Novell says subsequent versions will gradually add more access to native NetWare protocols so that Macs get faster, more fully functional access to NetWare servers of all types. (Ironically, Windows, DOS, and Unix NetWare clients will immediately reap the speed benefits if they connect to Mac servers running NetWare for PowerPC.)

Although counting on NetWare to serve as its high-end server software, Apple will continue to develop AppleShare for small and medium-size, mostly Macintosh networks. For the few Intel-based machines in these setups, Apple has reassumed from Farallon Computing the development of an AppleShare client for DOS and Windows.

The WS 8150 and 9150 ship with software that allows users to create RAID Levels 0 and 1 (striping and mirroring). They also include Dantz Development's native PowerPC Retrospect Remote server software and licenses for three clients.

Apple will ship PowerPC upgrades for the AWS 60 ($1259), AWS 80 ($1899), and Quadra 900 or 950 ($2499). Apple, 408/996-1010; Novell, 801/429-5900, 800/638-9273.—MARGIE WYLIE

AppleShare 4's Secret

HOW WOULD YOU LIKE TO RUN speedy AppleShare 4.0 for the $699 cost of upgrading the software—without the additional cost of a Quadra?

Using a ResEdit fix to bypass the software's test for an 68040-based processor, users have found that AppleShare 4.0 runs just fine on the Mac IIfx and IIci machines they already own, allowing them to boost server speed without allocating a Quadra.

Apple admits that there's nothing inherent in AppleShare 4.0 that limits it to running on Quadras. The company says it made a "marketing decision" to artifically limit the server software to 040-based Quadra hardware for a number of reasons. According to product manager Gary Schare, even with AppleShare 4.0's extensive caching systems, it outperforms AppleShare 3.X by a mere 10 to 20 percent running on a 68030. The software operates 200 to 300 percent faster than 3.X when running on an 040, Schare claims. A user who has been running AppleShare 4.0 on a Mac IIfx for six months, however, claims that in a side-by-side comparison, AppleShare 4.0 reads and writes at about 70 percent the speed of the same software running on a Quadra 700. Subjectively, network users reported that navigating the server's files and folders with 4.0 on a Mac IIfx seems nearly as fast as on a Quadra 700.

Apple says that testing and tailoring 4.0 for a single Mac processor cut down on development costs and time to market. The company says it is only looking out for the best interest of its customers who need to start migrating to Quadras so that they can then upgrade to PowerPC. Besides this gentle persuasion, Apple holds a trump card: if you patch AppleShare 4.0 so it runs on a lesser processor, Apple refuses to support the patched software.

The Patch

Making the following modifications to AppleShare 4.0 or 4.0.1 will allow you to run the server software on a Mac IIfx or IIci. Technically, these steps do not modify the AppleShare code itself, only the parameters used to check if Apple allows the code to run on the machine. (The fix changes the required minimum processor from a 68040 to a 68020.)

You can modify an installed server; modify a new server after installation and then apply AppleShare TuneUp 4.0.1 before launching AppleShare Admin.

1. Open a copy of the AppleShare File Server extension with ResEdit; keep the original extension in a separate folder. (You should never change your original AppleShare 4.0.)
2. While pressing the option key, open the GNRL ID #259 resource.
3. Change the initial 0005 to 0003.
4. Save and close the AppleShare File Server extension.
5. Open a copy of the AppleShare Admin application. Then modify the GNRL ID #256 resource, as in steps 2, 3, and 4.
6. Open a copy of the AppleShare Print Server application. Then modify the GNRL ID #256 resource, as in steps 2, 3, and 4.
7. Restart the server.

Macworld Lab tested this patch using AppleShare 4.0.1 on a Mac IIfx. We don't recommend using this patch to run AppleShare 4.0 on any pre-IIci machines.
—MARGIE WYLIE AND MATT CLARK

IN BRIEF

■ **DataClub's Demise** Novell has discontinued the Mac-based virtual-server networking software it acquired from International Business Systems. Owners of some DataClub versions can trade up to NetWare server software or AppleShare 4.0. Novell, 510/975-4491, 800/638-9273; Apple, 408/996-1010, 800/767-2775.

■ **DaVinci Upgrade** DaVinci Systems has finally released its fully functional Macintosh product. Based on the NetWare Message Handling Service (MHS), DaVinci eMail for the Macintosh v2.5 ($595) fully interoperates with and offers the same functionality as the company's DOS and Windows E-mail. 919/881-4320.

■ **Security Net** Network Security Guard 2.0.1 from MR Mac Software scans AppleTalk networks and compiles reports detailing shared files, folders, and volumes. It also points up risky behavior, such as guest access to an entire hard disk or an application; scans for specific file names; and runs scheduled unattended scans. Three-, ten-, and unlimited-zone versions cost $89, $169, and $210, respectively. MR Mac Software, 619/453-2845, 800/566-7622.

Streamlined ARA Servers

DAYNA COMMUNICATIONS AND Shiva Corporation have both announced Apple Remote Access servers that promise to do away with external modems, power supplies, and extra cabling. Both servers are ARA 2.0–compatible but not yet compliant with that version, meaning users can't access any new 2.0 features (see *Networks* news, *Macworld*, June 1994). Both also include thick and thin coax and 10BaseT connectors.



The Shiva LanRover/Plus ARA server supports many protocols.

Dayna's DaynaLink (under $3000) features eight PCMCIA Type II slots into which you can plug just about any third-party PCMCIA modem. When it ships at the end of June, the DaynaLink will support only AppleTalk, but IPX and TCP/IP support are in the works.

Shiva's LanRover/Plus ARA server ($4299 to $8499), based on the LanRover/E design, includes eight slots that can be filled with either modems or cards that provide standard serial ports for external modems or high-speed communications links.

Shiva's server supports multiple protocols, including AppleTalk, IPX, TCP/IP, and NetBEUI; is SNMP-manageable; and allows users to dial out through the LanRover/Plus as if it were a NetModem.

Dayna Communications, 801/269-7200, 800/531-0600; Shiva, 617/270-8300, 800/458-3550.—CAMERON CROTTY

Solving

Protocol analyzers help you identify trouble on the LAN



PETER HOEY

BY JOEL SNYDER

Your clients are complaining and sound increasingly frustrated. Some of the servers on the network you manage seem to play hide-and-seek whenever a user looks for them in the Chooser. You realize that the problem must be a recalcitrant root server screwing up your AppleTalk zones. But which root server?

Every LAN manager needs a protocol analyzer to help solve this kind of network anomaly. A protocol analyzer can capture all the packets on a network (even those addressed to another station), store the packets in a buffer, and decode the network-protocol information to show what's happening on a network. When a network is running fine, an analyzer can check network usage levels, but the most common reason to buy an analyzer is to help track down network problems.

The most popular protocol analyzers run on MS-DOS laptops, cost a ton of money, and have poor user interfaces. If you've put off spending hard-earned money for that, rest easy: you can now get a top-quality analyzer—plus the PowerBook to run it on—for about $3500. I tested Cabletron Systems' MacLanview, Neon Software's NetMinder series (NetMinder Ethernet and NetMinder LocalTalk), and AG Group's Peek series (EtherPeek, LocalPeek, and TokenPeek). The results were encouraging. Mac network managers can now choose from several easy-to-use, versatile products that are powerful enough to help solve real-world network problems.

Protocol analysis is a three-step process. First, you decide which traffic you need to look at. Next, you capture the traffic with the protocol analyzer. Third, you examine the captured frames to see what the problem is. (Ideally, you should be able to capture everything and then whittle down from there. Both NetMinder Ethernet and EtherPeek let you do this by filtering frames after capturing them; MacLanview doesn't.)

To test these analyzers, I set up a network with a mixture of protocols, including AppleTalk, TCP/IP, DECnet, NetWare's IPX, and Open Systems Interconnection (OSI). I tested the Ethernet versions of the product, though everything that applies to Ethernet also applies to LocalTalk versions.

To see how the software behaves in a portable environment, I tried three PowerBooks: a 100, a 145, and a 160. Connecting a PowerBook to Ethernet requires an external SCSI-to-Ethernet adapter. I used the Asanté Mini EN/SC, a top performer (see "The SCSI-to-Ethernet Connection," *Macworld*, January 1994), to test NetMinder Ethernet and EtherPeek; I used the Cabletron EA412 SCSI-Ethernet adapter to test MacLanview. For a desktop Macintosh, I used a Quadra 800 with a Cabletron E6100 DNI Ethernet card in it. (Cabletron only supports MacLanview on a Cabletron Ethernet adapter.)

If you plan to run these analyzers on your desktop Mac, install an Ethernet card for the analyzer's exclusive use.

Because the analyzers intercept all network traffic, anything else (such as AppleTalk or TCP/IP) using your normal Ethernet interface will be disconnected. I saw many crashes when trying to switch between protocol-analyzer mode and normal Macintosh mode on the same interface (something the software manufacturers specifically discourage).

All three packages performed adequately well. On the Quadra 800 with an Ethernet loaded to 6MB per second, the packages caught most everything. The PowerBook 100 lost packets as loads went above 0.5 MBps; on the PowerBook 145, loads above 1.2 MBps showed packet loss; and at 1.5 MBps the PowerBook 160 locked up. For serious protocol analysis, faster PowerBooks are better.

Capturing Network Packets

Capturing traffic with any of the three packages is simple: click on the Start button, and away they go. A main window gives brief information on each frame, scrolling as frames are captured. The analyzers also display statistics during capture, such as the type of frames, the network bandwidth used, and what nodes are sending and receiving traffic.

On a 21-inch screen, MacLanview and EtherPeek offer the most flexibility. Both allow you to resize windows to show more or less information. EtherPeek and NetMinder Ethernet also color packets, turning an Ethernet frame-trace into a Technicolor display. On a PowerBook, MacLanview and NetMinder Ethernet win points for cramming the most information into the smallest space. That feature becomes a detriment, though, when you have lots of screen real estate, since it circumscribes the amount of information that you can display.

On a multiprotocol Ethernet, capturing just the frames you're looking for can be difficult. Busy Ethernets create another problem: I filled up a 16MB buffer in less than a minute with 40,000 medium-size frames. So it's important to be able to capture and store a lot of data that you can sift through later.

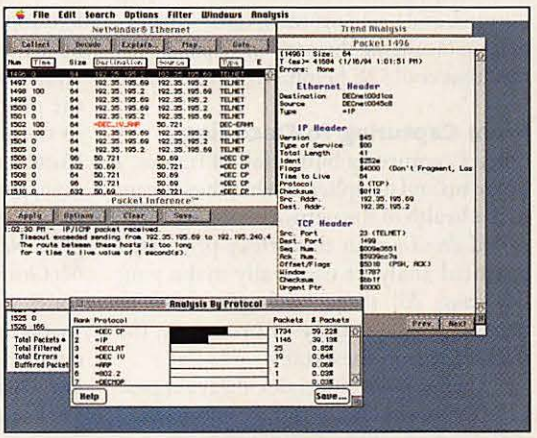
To see how efficiently the packages use memory, I gave each application 2MB of memory and then collected the same data stream with each. All three held about 11,000 short frames. If you have more disk space than memory, EtherPeek has a valuable feature that lets you automatically store accumulated frames on disk and continue capturing. NetMinder Ethernet won't do that, but it will maintain a sliding window, throwing out old frames to hold new ones. MacLanview came in last in this area. When its buffer is full, it's full, and that's all there is to it.

To overcome this limitation, all three packages offer *triggers* and *filters*. Triggers start capturing frames when a specific event has occurred, such as when a particular type of packet goes ("next time the Jan router sends an RTMP update packet, start capturing") or at a specific time ("start capturing at 1:17 a.m."). Each package has ample trigger capabilities.

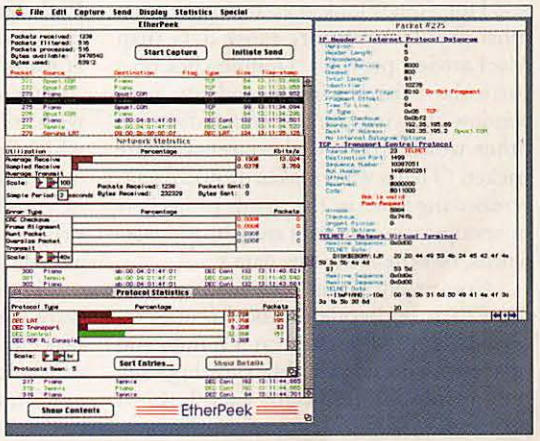
Filters tell the protocol analyzer which frames to keep and which to discard. Setting up filters in MacLanview can be very difficult. Filters based on station address or frame type are a few clicks away. A filter based on higher-level protocol information, such as filtering out all AppleTalk printer traffic, is almost impossible to get right. EtherPeek improves on MacLanview by including hundreds of sample filters. Starting with a sample similar to what I wanted, it took only a trivial effort to make the perfect filter. NetMinder Ethernet lets you build most filters with a minimum knowledge of protocol internals. The downside of a simpler interface is that some operations that are possible in EtherPeek (such as matching multiple fields in the same filter) just can't be done in NetMinder Ethernet.

MacLanview supports up to six filters active at any time. NetMinder Ethernet allows only five. EtherPeek has effectively no limit on the number of filters that can be active at any one time. The number of filters you need depends on the complexity of your task. A serious network problem can require more than five filters, but network managers responsible for only a few protocols will not find a five-filter limitation onerous.

It was when I was creating filters that I first had to break into the documentation. MacLanview's documentation has the best layout, making it easy to find information. MacLanview and NetMinder Ethernet include tutorial information on analyzing Ethernets, something EtherPeek leaves out. With all the packages, though, it was often simpler to try something and see how it worked than to



NetMinder Summary NetMinder Ethernet's main window shows a one-line summary of each frame on the network. To see exactly what's inside a frame, double-click on its line; NetMinder Ethernet then brings up a window explaining each field and subfield of each protocol in the frame.



EtherPeek Statistics EtherPeek offers a variety of statistics and protocol-analysis windows to help isolate performance problems. Packet summaries, detailed information on particular frames, and network traffic loads are, all at the same time, only a few mouse-clicks away. Statistics windows show which nodes are sending and receiving most of the traffic.

Analyzing Protocol Analyzers

	AG Group	Neon Software	Cabletron Systems
Ethernet product/ price	EtherPeek 2.0.3/$795	NetMinder Ethernet 3.01/$595	MacLanview 2.00.02/$1495
LocalTalk product/ price	LocalPeek 2.0.3/$495	NetMinder LocalTalk 1.1.1/$395	*
Token Ring product/price	TokenPeek 2.0.3/$995	NA	*
FDDI	NA	NA	**
Phone	510/937-7900	510/283-9771	603/332-9400
Toll-free phone	800/466-2447	800/334-6366	none
Protocols decoded	AppleTalk, TCP/IP, XNS, DECnet, LAT, NetWare's IPX, Banyan VINES, SNA, ISO NL & TL, SMB, NetBEUI, NetBIOS, OSI	802.2, 802.3, AppleTalk, Netway 1000, TCP/IP, XNS, DECnet, LAT, NetWare's IPX, Bridge/3Com, Banyan VINES	802.2, 802.3, 802.5, AppleTalk, TCP/IP, XNS, DECnet, LAT, NetWare's IPX, Banyan VINES, ISO NL & TL, NetBIOS, SMB, Cabletron
Online help	no	yes	no
Filters (maximum)	32,000	5	6
Generate network traffic	yes	no	yes
Remote capture	yes	yes	no
Filter after capture	yes	yes	no
Statistics and graphs	built-in	built-in and via Excel	built-in
Trigger basis	filter or absolute time	filter, relative time, absolute time, traffic, or error level	filter
Alarms	new node, new protocol, threshold (high), network intruder	various, included in packet inference	new node, threshold (high/low), network errors, network intruder
Capture buffer options	clear buffer and continue; save to disk and continue	stop when full; clear oldest packets and continue	stop when full; clear buffer and continue

*NA = not available. * Included in MacLanview package. ** Product should be available by September 1994.*

puzzle through confusing manuals.

Only NetMinder Ethernet comes with online help, as a combination of balloon help, a liberal assortment of help buttons, and some protocol tutorial information (available through an Explain button) that could be helpful to novice users.

From Capturing to Decoding

Once I captured a buffer full of frames, I broke up and deciphered what they meant to the health of the network—a procedure called *decoding*. In this tricky process, a protocol analyzer can really make your life easy. All three packages claim to decode a wide variety of protocols; the difference is in the details.

MacLanview's decodes always appear in its main window, as tightly summarized information. This summarized data is good for a quick look at your network, but most problems require more data than MacLanview provides. Double-click on a particular Ethernet frame, and you get a window showing the raw frame data—in other words, the actual contents of the packet. (That's what makes protocol analyzers dangerous in the hands of hackers or snoops, who can capture E-mail, passwords, or other sensitive data.)

Conversely, EtherPeek and NetMinder Ethernet decode protocol frames on command: double-click on a frame, and up comes a decode window showing each field inside the frame for each level of protocol.

EtherPeek has the most versatile decoding capabilities, offering multiple decoders for many different packet types. NetMinder Ethernet also did an excellent job, figuring out almost all the packets I threw at it. For these two products, your main concern is to make sure that the protocols on your LAN are included in the product you buy (see "Analyzing Protocol Analyzers"). Serious network managers should also get a good protocol reference book, such as Matthew Naugle's *Network Protocol Handbook* ($49.50, McGraw-Hill, 1994). MacLanview's decodes were almost useless above the network layer. It took 40 minutes with detailed protocol specifications to figure out what was instantly revealed in EtherPeek and NetMinder Ethernet.

Pick the Right Features

To choose the appropriate product, look at features and ease of use. My favorite is AG Group's EtherPeek. I was impressed with its powerful filtering capabilities, which let me grab the packets I needed more easily than did NetMinder Ethernet or MacLanview. Experienced network programmers or managers will find this a quality tool.

For novice managers, Neon Software's NetMinder Ethernet may be the best choice. Its new Packet Inference feature helps detect potential protocol errors and network problems, such as new nodes, routing misconfigurations, excessive error rates, and unreachable systems. Packet Inference, combined with NetMinder Ethernet's online help can guide beginners through the complex world of protocol analysis. Cabletron's MacLanview comes in third. Its PowerBook-friendly display and trimmed-down interface are strong features, but the difficulty of filtering packets is something that Cabletron has to work on. **m**

JOEL SNYDER is senior analyst with Opus One, a consulting firm in Tucson, Arizona. He specializes in networks and the international aspects of information technology.

PROTOCOL ANALYZERS

MW EDITORS' CHOICE

We looked for the right balance of well-designed features and a clear interface to handle often-daunting network chores.

EtherPeek Powerful and flexible filtering and decoding capabilities distinguish this product from its competitors. EtherPeek's many features will appeal to experienced network managers, but its simple interface can put the novice at ease. **Company:** AG Group. **Price:** $795.

No Boundaries
NO LIMITS

Networking Macs With Built-In Ethernet Is Now A Small Matter.

Very Small.

Power Macintosh 8100/80



EasyNet Transceivers. Small Size, Low Cost, Guaranteed.

When buying Power Macs and other computers with built-in Ethernet, don't overlook one small thing. The hot new EasyNet™ transceivers from Dayna. These clever little connectors are the easiest and most affordable way to connect devices with an on-board Apple Ethernet port to either thin Ethernet or 10BASE-T networks.

FEATURES	
Low Retail Price	✓
Only 2.25" x 1.5" x .75"	✓
Thin Ethernet Support	✓
10BASE-T Support	✓
IEEE 802.3 Compliant	✓
100% Apple Compatible	✓
Made in the USA	✓
Lifetime Warranty	✓
24-Hour Replacement	✓

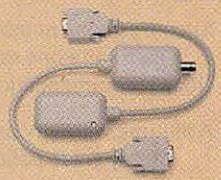
They're ideal for Power Macs, Quadras, LaserWriters and other Apple products with built-in Ethernet, as well as non-Apple devices that use the same mini-Ethernet port.

Part Of Our Complete Solution.

EasyNet transceivers are the smallest addition to Dayna's large family of Ethernet products. Our full line of adapters and SCSI connectors support all Macintosh models and all Ethernet cable types.

Getting Power Macs connected to Ethernet is no big deal. In fact, with Dayna, it's a very small matter indeed.

For more information on Dayna's Ethernet networking products, call 1-800-443-2962, ext. 831, or use our 24-hour FAX response service.



EasyNet transceivers provide plug-and-play connections to 10BASE-T and thin Ethernet networks.

FAX Response: 801-269-7340, Doc.#1250

Dayna®

EasyNet and No Boundaries, No Limits are trademarks of Dayna Communications, Inc. All other product names are the trademarks of their respective holders.
©1994 Dayna Communications, Inc., Sorenson Research Park, 849 West Levoy Drive, Salt Lake City, UT 84123

Circle 161 on reader service card

Okay, so what's on your Xircom Pocket EtherTalk Adapter?

Jill Byron
Account Executive

My PowerBook, which I take everywhere.

My LAN which I can finally get on!

Access to all the network applications that don't fit on my PowerBook.

E-mail thanking Sean for my Xircom Pocket EtherTalk Adapter.

My Syquest and CD ROM drives daisy-chained on my SCSI port.

Phantom Power cable so I never have to worry about packing an AC adapter.

The same dependable Xircom brand name as all the PC notebook users have on their LAN adapters.

My calendar appointments from the server.

Xircom's phone number in case someone asks for a recommendation.

A lifetime warranty and upgrade policy.



Sean Scullion
MIS Director

The Xircom name.

Xircom guaranteed compatibility.

Choice of 10Base-T or thin Ethernet via the SCSI port.

10Mbps Ethernet vs. AppleTalk's 230 Kbps access to all my file servers.

Special pass-through SCSI feature for Syquests, CD ROMS and other peripherals for my PowerBook users.

Phantom Power cable that draws from the Apple Desktop Bus so I don't get hassled about AC adapters.

Reversible SCSI cable so both my Powerbook and Macintosh desktop users can use it.

30-day free product evaluation and 37% discount when I purchase the evaluation unit.

Lifetime warranty and upgrade policy.

All my PowerBook users.

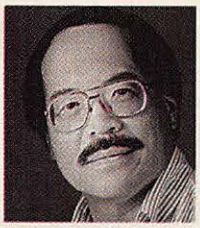


Xircom
The Mobile Networking Experts.

For more information on the Xircom Pocket EtherTalk™ Adapter, call 1-800-438-4526 ext. 31R.

Xircom U.S. Headquarters: 818-878-7600. Xircom Europe NV: +32/(0)3 360.38.11. Xircom Asia: +852 525-2078.
©1994 Xircom, Inc. Xircom is a registered trademark of Xircom, Inc. EtherTalk is a registered trademark of Apple Computer, Inc.
All other brand names or marks are used for identification purposes and may be trademarks of their respective owners.

Circle 269 on reader service card



BY CARY LU

PowerBook Notes

Free and Low-Cost Utilities

WITH ITS NEW POWERBOOKS, APPLE HAS at last begun shipping a full complement of software tailored to portable computing. Out of the software listed in "PowerBooks: The Next Generation," in this issue, every PowerBook owner should at least have Apple's PowerBook control panel 7.2. Many will also find Apple's Control Strip and File Assistant appealing. File Assistant is sold by Apple for about $65; at press time, Apple had not announced how PowerBook owners could get the PowerBook control panel and Control Strip.

There are many other ways to handle the host of little functions that can enhance and/or simplify PowerBook operations. For example, you can buy one of the big commercial utility packages, such as Connectix PowerBook Utilities. Here, though, I focus on Apple's software and on free and low-priced shareware utilities.

Power Management

The PowerBook control panel 7.2 (which first shipped with the Duo 250 and 270c) still has a single slider for power management, with the Better Conservation setting at one end and Better Performance at the other. That was the only control in version 7.1; but if you switch to the Custom setting in 7.2, you can individually set time delays for sleep, hard drive spin-down, and screen backlighting. You can also override Apple's default settings for battery and AC power.

Apple's new Control Strip gives you fairly quick access to the PowerBook control panel and other power-management features (see "Take Control" in "PowerBooks: The Next Generation" in this issue). However, Control Strip has some



potential problems. It uses up screen real estate—its floating window cannot be covered up by application windows. Although you can collapse the strip to a short stub, even the stub can get in the way. Second, Control Strip's default location in the lower left corner of the screen is not ideal, since many programs use that area to display information. So to keep the strip away from active windows, I usually put it in either the upper or lower right corner, near the disk icon or the Trash Can (hold down the option key and drag the strip).

To use Control Strip to spin down the hard drive or put the PowerBook to sleep, you must open the strip, select an icon, and set the switch. Keyboard commands are much faster. The Toolbox in Apple File Assistant gives you function keys for hard drive spin-down (shift-control-⌘-0) or sleep (shift ⌘-0).

Several shareware and freeware programs also give you keyboard controls. Jon Pugh's ToggleAT Fkey 3.0 (pay whatever you want) switches AppleTalk—if it's loaded—on or off. PowerSleep Fkey 1.0 (free; by Urs Calibran, Stefan Frey, and Alexis Gehrt) invokes sleep, first turning off AppleTalk if necessary. Bill Steinberg's SpinD 1.0 (free) spins down the hard drive.

Many programs, including Control Strip, display battery status with a gauge; some estimate the time remaining. But unless you have a new 500-series PowerBook with "intelligent" batteries, such a display offers little more information than does the simple battery control panel included with every PowerBook.

Some gauge programs do offer special features. Volts 1.3.1, a $5 application by Lawrence Anthony, gives you the option of graphing voltage levels over time, in a choice of three formats.

Three shareware programs by Jeremy Kezer deal with battery power; all offer additional features when you register and receive your password. MyBattery 2.2.2 ($10) shows the voltage levels for three different batteries, and it lets you switch AppleTalk and your modem on and off. Threshold 1.0.2 ($10) resets the voltages for first and second low-power warnings and for final shutdown as you run out of battery power. You can reset the threshold for an external battery, or—if you have a PowerBook 140 or 170 and the new type of higher-capacity internal battery—you can get a little more battery life by setting a lower threshold. DeepDischarge 1.0.2 ($5) runs the battery down to prepare for recharging; it works like an external conditioner except that it doesn't start recharging automatically—you have to do it manually.

continues

PHOTOGRAPH BY PAUL FRANZ-MOORE/SCREEN IMAGE BY JIM LUDTKE

Plug Alert 1.0.1 (free) by Sean Hummel puts very clear warnings on screen if the AC adapter isn't getting power or if its plug has slipped out.

Keyboard Utilities

No PowerBook keyboard has the full set of keys found on an Apple Extended Keyboard. Even the new 500-series PowerBook keyboards include just 12 of the 21 function keys (F1 through F12), and none of the 18 keypad keys. Several programs remap the F-keys onto PowerBook keyboards, mostly by using the control key in combination with another key. The most complete F-key program—better than any commercial program—is Keyboard Plus 1.1.1, a $15 shareware control panel by Berrie Kremers. It maps all keypad and function keys and it also supports compound keys (option-F1, for example).

Many PowerBook users frequently hit the caps lock key by accident. Apple's Caps Lock extension shows the caps lock status in the menu bar—but you'll see it only if you are looking for it. On the other hand, Ed Ludwig's Caps Lock Notify (free) puts a prominent notification on screen each time you hit the key. Other programs, including S. Kevin Hester's free CapsControl 1.02, simply disable the caps lock key altogether.

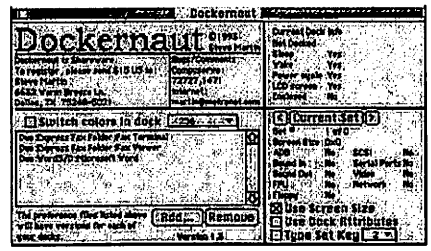
Screen and Sound Utilities

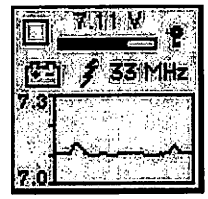
Backlight Control 1.0a3, a free control panel by Ricardo Batista, conserves power by turning off the backlight after a specified period of inactivity. (You don't need this if you have PowerBook control panel 7.2.)

The Fat Cursors 1.1 control panel ($5) by Robert Abatecola enlarges the arrow and the I-beam cursor, improving visibility on a passive matrix screen. The Find Cursor 1.0 extension (free) by Mike Samuels puts a box around the cursor if you hold down the control key and click the mouse or trackball button. These programs work well together.

Two programs simplify changing the screen bit-depth (number of grays or colors) and the sound level. Ambrosia Software's ColorSwitch 2.3.0 ($10) adds an icon to the menu bar for changing the volume level and bit depth without leaving your application. Grant Dair's free Fast Switches 1.0.0 includes six bit-depth switches and eight volume switches that set to volume levels 0 through 8. Typically, you need only two or three of the switches; simply run the application for the screen depth and volume level you want. But you have to leave your current application to run Fast Switches.

An annoying sound problem of PowerBooks results from one of their power-saving techniques: after about ten seconds of inactivity the sound circuit shuts down. When the sound circuit turns back on, you hear a click. Shhh! (no version number) by Patrick C. Beard, a free extension, patches the Sound Manager to prevent the sound circuit from shutting down—at a very slight cost in battery life—thus avoiding the click.





Dockernaut (above) manages screen settings and software preferences for a docked Duo. Volts (left) displays power status and graphs voltage over the battery's most recent two minutes of use.

System Utilities

Insomniac 1.0.2 ($10) from Jeremy Kezer sets as many as 50 scheduled times at which a PowerBook will wake up. It works with the PowerBook 100, the Duos, and the new 500 series. For example, you can set a Duo to send electronic mail or a fax when phone rates are lowest, or when the receiving fax device is least likely to be in use. Insomniac does not shut down the computer.

How can you shut down the computer automatically, whether you have a Duo that has woken up for an online session, or you just have a PowerBook with a task to finish while you want to go somewhere else? You simply set your PowerBook to go to sleep after a delay; just make sure that none of the many functions that inhibit sleep (AppleTalk turned on, for example) are in effect.

PwrSwitcher 1.1.2, David Lamkins's free control panel, uses the escape key to switch between active applications, saving you a trip to a window or to the application icons in the menu bar.

SoftwareFPU 2.45, a $10 control panel from John Neil, enables a PowerBook without a floating-point unit to run software that expects one. The program improves software compatibility but does not speed up math computation. It does not run on 68000-based Macs such as the PowerBook 100, but it works with the new 040 PowerBooks.

The Duo has a split personality; it's both a lightweight portable and a desktop computer with a dock. The system configuration you need probably depends on whether you are using a Duo alone or with a dock. Alan Steremberg's free Duo Extension Picker 1.0 checks the hardware during start-up and loads the proper extensions, depending on how you're using the Duo. For users of multiple docks, Steve Martin's $15 Dockernaut 1.4.2 remembers the color-depth capability of each dock and sets the Duo accordingly. It also lets you create multiple preference files for several popular programs (including Microsoft Word) and then selects the appropriate preference file for your work situation: Duo alone, with a dock, or with a minidock. You can set Word, for example, to display its tool bar on large monitors and suppress the tool bar on the Duo's screen. Dockernaut requires an extension manager (Now Utilities or Conflict Catcher II) to selectively load extensions depending on which dock you use.

Software Sources

Most of the programs I've listed are shareware or freeware; you can get them from major online services, such as America Online and CompuServe, which tend to have the most up-to-date versions. Many are also available from user groups. Keyboard Plus, Caps Lock Notify, and Duo Extension Picker were not available from the commercial online services as I wrote this—I found them on the Internet at mac.archive.umich.edu. If you get your shareware on a CD-ROM, look for one that is updated frequently, such as the quarterly BMUG PD-ROM ($40) from BMUG (510/549-2684). Remember that paying for connect time or for a floppy disk or CD-ROM is not the same as paying the shareware fees.

More on SCSI Cabling

In last month's column on managing SCSI devices, I included a table ("Connecting Cables," page 164) that showed the most commonly used methods of connecting a PowerBook to a SCSI device and of connecting a PowerBook in SCSI disk mode to another Mac. However, one of the cables shown (labeled B in the table) is an unusual one—a DB-25 male to C-50 female cable ($8 from Computer Gate International, 408/730-0673). You can substitute instead a standard SCSI cable, DB-25 male to C-50 male, with a female-to-female C-50 gender changer. m

CARY LU is a *Macworld* contributing editor who covers mobile- and remote-computing issues in this monthly column. His books include *The Apple Macintosh Book* (Microsoft Press, 1992).



NOW AVAILABLE AT:
ComputerWare, Computize, Creative Computer, MacWarehouse, MacConnection, Fry's, J&R, and many other major resellers.

"The best solution if you regularly need longer battery life" –*MacWeek*

Now use your PowerBook up to five times as long – without swapping and recharging batteries, dimming your screen, slowing your processor, or staying within six feet of an AC outlet

Remember the day you first brought your new PowerBook® home?

It was faster than a speeding bullet. More powerful than a locomotive. Able to leap tall buildings in a single bound. In fact, the two of you could do anything.

But then it happened...

The Big Chill

Your first low battery warning. That's when *everything* changed.

You quickly discovered that if you use all the performance your PowerBook offers, the battery just doesn't last long enough.

Finally, there's a solution.

- ***3 or 5 times the battery life***
- ***Attaches easily to PowerBook***
- ***Charges with Apple AC adapter***
- ***NEW! Free CPU software***
- ***Cost effective***
- ***No "memory-effect"***

CPU CONNECTIX POWERBOOK UTILITIES

Power Breakthrough

Introducing PowerPlate™ rechargeable power systems, designed specifically for PowerBooks.

Quite simply, PowerPlates solve all your battery frustrations. (In fact, you may wonder how you ever got along without one.)

PC LapTop Magazine concluded, *"This is the best computer purchase you'll make all year."* And thousands of users agree. One even wrote to say his PowerPlate was *"The best product I've ever purchased in the Mac world."*

Call Toll-Free Today

See your dealer today, or for more information, just call us toll-free.

1-800-305-7936

Department G05

Technöggin

1018 Delta Ave • Suite 303 • Cincinnati OH 45208
Phone 513-321-1777 • Fax 513-321-2348

POWERPLATE mini3

"A bargain" -MacWEEK

Ultra-compact design provides 2.5 to 3 times the battery life of PowerBook battery alone. Only 9.4" by 5.6" – an easy fit in any carrying case. Our most cost-effective power solution. ***$169.95***



POWERPLATE 3x

"The best solution if you regularly need longer battery life" -MacWEEK

PowerBook-footprint design provides 2.5 to 3 times the life of PowerBook battery alone. Two-stage charging with LED indicators. ***$239.95***



POWERPLATE 5x

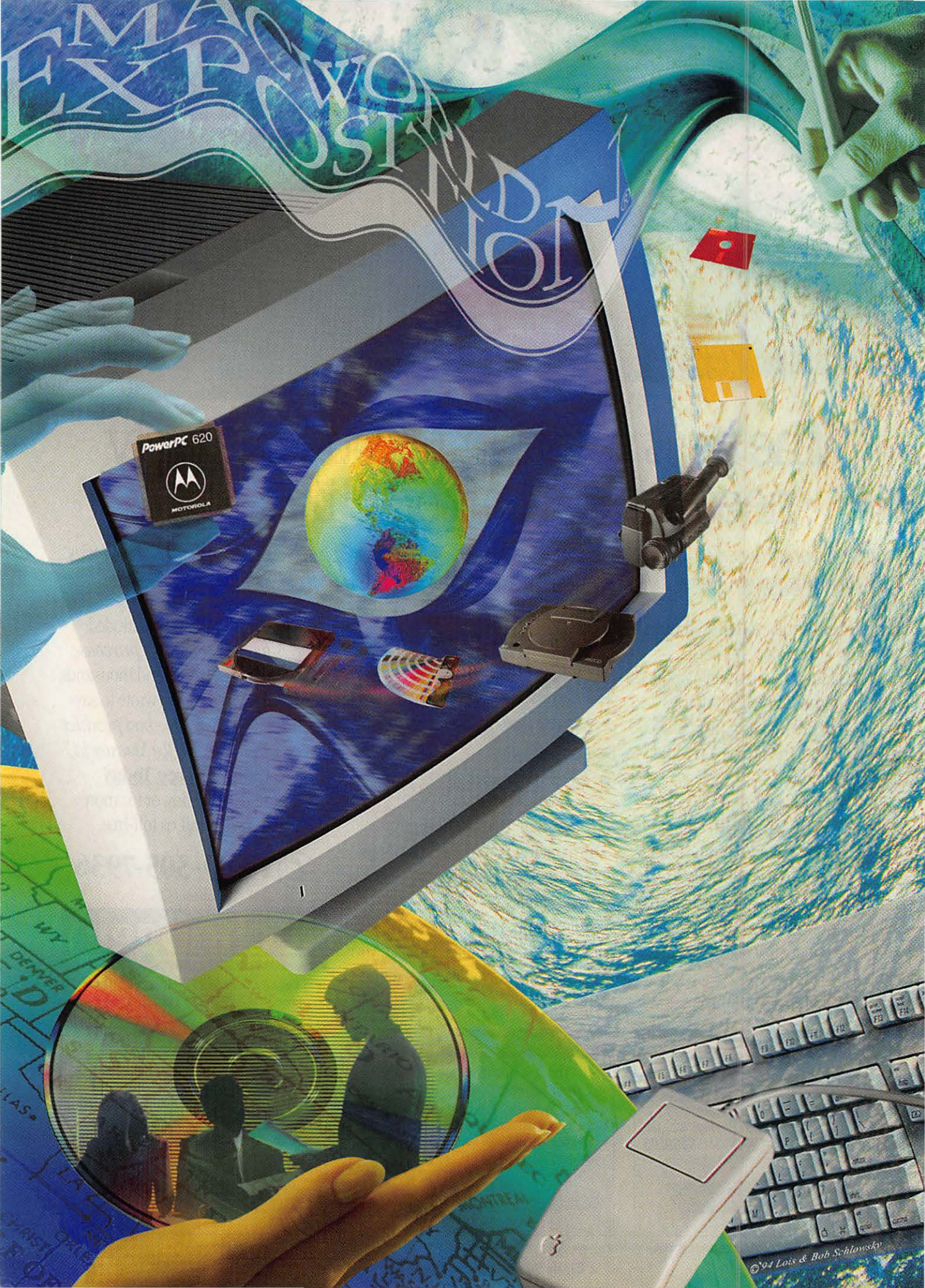
"Almost an automatic purchase for color PowerBook users" -MacWEEK

The ultimate system: provides 4 to 5 times the battery life of PowerBook battery alone. Perfect for power-hungry color PowerBooks. ***$299.95***



© 1994 Technöggin Inc. Technöggin and PowerPlate are trademarks of Technöggin Inc. PowerBook is a registered trademark of Apple Computer, Inc. CPU is a trademark of Connectix Corporation.

Circle 94 on reader service card


MACWORLD EXPO
PowerPC 620
MOTOROLA
©'94 Lois & Bob Schlowsky

WHERE IT ALL COMES INTO VIEW

A WORLD OF OPPORTUNITY

How can you maximize the potential of the Macintosh? See the latest and best Macintosh products and services? Learn how best to put the Macintosh to work for you? Discover all this and more at MACWORLD Expo.

With over 400 exhibiting companies presenting the latest in Macintosh technology, MACWORLD Expo is the single best resource for learning how to harness the power of the Macintosh. Visit exhibits from the leading Macintosh vendors. Make practical decisions on how to configure your Macintosh system to meet your business or personal needs. Envision tomorrow's technology, under development today. At MACWORLD Expo, the world of Macintosh all comes into view.

Discover the Creative Possibilities

At MACWORLD Expo, make side by side comparisons of thousands of Macintosh hardware, software, peripheral and service products. Have a question? Need an expert opinion? Our on-site Macintosh professionals lend their expertise to help you choose the best products for your individual needs. We'll help you take your Macintosh to the max!

MACWORLD Expo/Boston; August 2-5, 1994

MACWORLD Expo/Boston will cover over 350,000 square feet of exhibit space at both the World Trade Center and Bayside Exposition Center. When you come to MACWORLD Expo/Boston, you'll see uses and applications for the Macintosh in a variety of areas including: Networking, Spreadsheet Analysis, Databases, Education, Research, Word Processing, Accounting, Law, CAD/CAM, Forecasting, Design, Publishing, Illustration, Animation, Music, Programming, Entertainment and Multimedia. You'll see all this spread out over both locations so plan to be in Boston from August 2-5 and experience the Macintosh at its absolute best!

DON'T MISS THE UGWUMP!

User Group Welcoming Unwinding Meeting Place

"People Networking parlor" for user groups to share success stories, exchange newsletters and literature. Learn how to start a user group in your area!

Pre-Registration Savings!

Now is the time to pre-register for MACWORLD Expo. Return the attached pre-registration form with your payment by June 24 and save $30 on all Conference sessions and Exhibits ($120 now vs. $150 at the door). An Exhibits-only admission saves you $15 ($25 now vs. $40 cash only at the door). And since your time is as valuable as your money, we'll send your admission badge early when you pre-register. Avoid the registration crowds and get a jump start on the exhibition!

THE CONFERENCE PROGRAM

Tomorrow's Innovations Today

MACWORLD EXPO/BOSTON 1994 CELEBRATES THE 10TH ANNIVERSARY OF THE MAC'S DEBUT WITH A PANORAMA OF EMPOWERING OPPORTUNITIES AND POSSIBILITIES. FROM APPLE'S TECHNOLOGICAL BREAKTHROUGHS TO THE IMPACT OF DIGITAL CONVERGENCE, YOU'LL DISCOVER NEW DIMENSIONS TO THE MAC.

HERE'S A PREVIEW OF MACWORLD EXPO/BOSTON'S 14 SEPARATE CONFERENCE PROGRAMS. CREATE YOUR OWN AGENDA:

1 The PowerPC Conference.

EVERYTHING THERE IS TO KNOW ABOUT POWERPC — FOR USERS, VENDORS, AND DEVELOPERS — INCLUDING: WHAT POWERPC DELIVERS; APPLE'S IMPLEMENTATION VS. IBM'S; COMPATIBILITY; UPGRADING; WHEN/WHAT TO BUY; NATIVE VS. EMULATION; HOW COMPETITIVE IS POWER PC?; POWERPC DEVELOPMENT TOOLS; AND MORE.

2 The Design Conference.

CELEBRATED MAC DESIGNERS SHARE CREATIVE INSIGHTS AND POWER-USER TIPS ON: COLOR MANAGEMENT; CREATIVE IMAGING; PREPRESS; DIGITAL PHOTOGRAPHY; MIXING MEDIA; DIGITAL ART; KPT; AND MORE.

3 The Entertainment Conference.

THE BEST IN THE BUSINESS PRESENT TOOLS AND TECHNIQUES FOR TV, FILMS, AND COMMERCIAL APPLICATIONS, FEATURING: INTERACTIVE CINEMA; QUICKTIME MOVIES; DIGITAL VIDEO; HIGH-END MUSIC; INNOVATIVE EFFECTS; INTERACTIVE EROTICA; LIVE THEATRE; AND BROADCAST QUALITY GRAPHICS.

4 The Connectivity Conference.

ENHANCE COMMUNICATIONS, MAXIMIZE NETWORKS, AND SEE WHAT'S IN STORE FOR THE FUTURE WITH: CONNECT-ANYWHERE NETWORKING; MAXIMIZING THE INTERNET; NETWORKING NEWTONS; TCP/IP; CLIENT/SERVER; NETWORK MANAGEMENT TOOLS; APPLETALK NETWORKING.

5 The Small Office/Home Office Conference.

YOUR NEEDS ARE DIFFERENT THAN GIANT ORGANIZATIONS! SPECIAL SOHO TIPS ON MARKETING, TELECOMMUTING, FINANCE/ADMINISTRATION.

6 The Science/Technology Conference.

THE MAC AS A CRITICAL TOOL IN LABORATORY AND SCIENTIFIC SETTINGS, INCLUDING TIPS ON VISUALIZATION USING QUICKTIME, SCIENTIFIC DATA ANALYSIS, AND VIRTUAL REALITY.

7 The Programmer/Developer Conference.

FOR IN-HOUSE DEVELOPERS, VETERAN INDEPENDENTS, AND NOVICE MAC TECHIES ALIKE: THE NEW WORLD OF OPPORTUNITIES WITH NEWTON, POWERPC, OPENDOC, APPLESCRIPT — PLUS ULTIMATE MAC PROGRAMMING TIPS.

8 The Education Conference.

TEACHERS AT THE ELEMENTARY, SECONDARY, AND UNIVERSITY LEVELS SHARE SUCCESSFUL MAC EXPERIENCES WITH MULTIMEDIA, CD-ROM, HYPERCARD, QUICKTIME, BBSS, INTERNET — AND STUDENTS DEMO THEIR MOST OUTSTANDING MAC PROJECTS IN SCIENCE, MATH, SOCIAL STUDIES AND DESKTOP PUBLISHING.

9 The How-to-Get-Started Conference.

LEARN THE BASICS — OF NEWTON, DESKTOP PUBLISHING, MUSIC, INTERNET, TELECOMMUNICATIONS, DESIGN, MULTIMEDIA, QUICKTIME, AUTHORING, INTERACTIVITY, AND USING CD-ROM.

10 The Advanced User Conference.

VETERAN USERS SHARE THEIR EXPERTISE ON CUSTOMIZING YOUR MAC, RESOLVING SYSTEM CONFLICTS, MAXIMIZING FONTS, AND POWERIZING YOUR POWERBOOK.

11 The Special Interest Group Conference.

LOOKING TO COMPARE MAC NOTES WITH OTHERS? DEVELOP AN INVALUABLE "USER NETWORK." HERE YOU'LL FIND SESSIONS ON THE MAC IN THE LAW OFFICE, HEALTH CARE, REAL ESTATE, AND IS; AND THE PERENNIAL FAVORITE MUSE (MACWORLD EXPO USER GROUP EXTRAVAGANZA).

12 Application Workshops.

INTENSIVE TRAINING SESSIONS BY MACACADEMY ON: BEGINNING MACINTOSH; ADVANCED MACINTOSH; MACINTOSH FONTS; BEGINNING MAC NETWORKING; CLARIS FILEMAKER PRO; MICROSOFT WORD; ALDUS PAGEMAKER; MICROSOFT EXCEL.

13 The Multimedia Conference.

CREATE QUALITY PRODUCTIONS AND PRESENTATIONS WITH BOTH HIGH-END AND LOW-END MULTIMEDIA TOOLS. SHARE INSIGHTS FROM THE WORLD'S MOST SUCCESSFUL MULTIMEDIA EXPERTS ON INTERACTIVITY, DESKTOP VIDEO, ANIMATION, INTERFACE DESIGN, AUTHORING TOOLS — AND SEE THE PROFITABLE IMPACT IN EDUCATION, TRAINING, AND MUSEUMS.

14 The CD-ROM Conference.

WANT TO PUBLISH AN ENTERTAINMENT OR CONSUMER CD? START WITH THE MAC. LEARN ABOUT PHOTO CD; KIOSKS; BUILDING SUCCESSFUL TITLES; DEVELOPING INTERACTIVE GAMES; CONTENT LICENSING; DOCUMENT CONVERSION AND MANAGEMENT; AND MARKETING YOUR CD.

MACWORLD EXPO/BOSTON

BAYSIDE EXPOSITION CENTER
& WORLD TRADE CENTER

EXHIBITION HOURS

AUGUST 2-4	10:00AM-6:00PM
AUGUST 5	10:00AM-4:00PM

CONFERENCE HOURS

AUGUST 2	10:30AM-5:30PM
AUGUST 3-4	11:30AM-5:30PM
AUGUST 5	11:30AM-2:30PM



REGISTRATION FORM

PRE-REGISTER FOR MACWORLD EXPO/BOSTON BY JUNE 24, AND SAVE $15 TO $30

PLEASE REGISTER ME FOR:

❑ **PACKAGE ONE $120.**
CONFERENCE SESSIONS* AND EXHIBITS. PREREGISTER BY JUNE 24 ($150 AT THE DOOR).

❑ **PACKAGE TWO $25.**
ADMISSION TO EXHIBITS ONLY. PRE-REGISTER BY JUNE 24 ($40 CASH ONLY AT THE DOOR).

❑ **CHECK IF APPLICABLE.**
I'M AN INTERNATIONAL ATTENDEE. PLEASE SHIP MY BADGE BY FEDERAL EXPRESS. ENCLOSED IS AN ADDITIONAL $45.

PLEASE CHOOSE YOUR PACKAGE AND FILL OUT THE FORM COMPLETELY. INCOMPLETE FORMS WILL BE RETURNED. ONE FORM PER PERSON; MAKE PHOTOCOPIES FOR ADDITIONAL PEOPLE. PLEASE DO NOT STAPLE CHECK TO FORM. REGISTRATION FORMS RECEIVED AFTER JUNE 24, WILL BE RETURNED UNPROCESSED. PURCHASE ORDERS CANNOT BE ACCEPTED. ALL REGISTRATION FEES ARE NONREFUNDABLE. A $20 FEE WILL BE CHARGED FOR ALL RETURNED CHECKS. SEND COMPLETED FORMS TO:

MACWORLD EXPO/BOSTON
P.O. BOX 4010
DEDHAM, MA 02027

U.S BADGES: MAILED AROUND JULY 18.

INTERNATIONAL BADGES: HELD ON-SITE.

BADGE PICKUP HOURS ARE:
AUG. 1, 11AM - 3PM; AUG. 2-4, 9AM - 6PM; AUG. 5, 9AM-4PM

PLEASE SEND MY REGISTRATION BADGE AND FURTHER INFORMATION TO:

PLEASE CHECK ONE: ❑ HOME ADDRESS ❑ COMPANY ADDRESS

FIRST NAME ___ MIDDLE INITIAL ___ LAST NAME ___

STREET ADDRESS ___

CITY ___ STATE ___ ZIP CODE ___–___

COUNTRY (OTHER THAN U.S.) ___ TELEPHONE ___-___-___

IF MAILING TO COMPANY ADDRESS: *(IF MAILING TO YOUR HOME ADDRESS, LEAVE THE NEXT TWO LINES BLANK).*

TITLE ___

COMPANY ___

❑ CHECK ENCLOSED (MAKE PAYABLE TO MACWORLD EXPOSITION) AMOUNT $ ___

❑ MASTER CARD ❑ VISA ❑ AMERICAN EXPRESS AMOUNT $ ___

ACCOUNT NUMBER ___

EXPIRATION DATE (INCLUDE ALL NUMBERS) ___/___

CARD HOLDER SIGNATURE (SIGNATURE NECESSARY TO BE VALID) ___

IF CARD HOLDER IS OTHER THAN REGISTRANT, PLEASE PRINT CARD HOLDER'S NAME BELOW:

FIRST NAME ___ MIDDLE INITIAL ___ LAST NAME ___

CASH ONLY AT THE DOOR. AFTER JUNE 24, YOU MUST REGISTER AT THE SHOW.

PLEASE CHECK THE APPROPRIATE INFORMATION:

YOUR INDUSTRY OR PROFESSION
(CHOOSE ONLY ONE)
1. ☐ ACCOUNTING/FINANCE
2. ☐ ARCHITECTURE/CONSTRUCTION
3. ☐ ART/DESIGN/CREATIVE SERVICES
4. ☐ ARTS & ENTERTAINMENT
5. COMMUNICATIONS/PRINTING/PUBLISHING
6. ☐ COMPUTER RESELLER/VAR/VAD
7. ☐ CONSULTING
8. ☐ CORPORATE/GENERAL MANAGEMENT
9. ☐ DISTRIBUTOR/DEALER/RETAILER/SERVICE
10. ☐ ENGINEERING/R&D
11. ☐ GOVERNMENT/MILITARY
12. ☐ HEALTH/MEDICAL SERVICES
13. ☐ COLLEGE/UNIVERSITY
14. ☐ ELEMENTARY/HIGH SCHOOL
15. ☐ LEGAL SERVICES
16. ☐ MANUFACTURER (COMPUTER INDUSTRY)
17. ☐ MANUFACTURER (NON-COMPUTER INDUSTRY)
18. ☐ MARKETING/SALES/PR/COMMUNICATIONS
19. ☐ OTHER
20. ☐ DOES NOT APPLY

YOUR TITLE
(CHOOSE ONLY ONE)
21. ☐ CEO/PRESIDENT/VP
22. ☐ CONTROLLER/TREASURER/ACCOUNTANT
23. ☐ DP/MIS MANAGER
24. ☐ NETWORK MANAGER
25. ☐ PROGRAMMER/ANALYST
26. ☐ ENGINEER/SCIENTIST/R&D
27. ☐ MANAGER/DEPARTMENT HEAD
28. ☐ PROFESSIONAL (LAWYER, DOCTOR, ETC.)
29. ☐ CONSULTANT
30. ☐ MARKETING/SALES
31. ☐ EDUCATOR
32. ☐ ART DIRECTOR/GRAPHICS
33. ☐ EDITOR/WRITER
34. ☐ STUDENT
35. ☐ OTHER
36. ☐ DOES NOT APPLY

SIZE OF YOUR ORGANIZATION
(NUMBER OF EMPLOYEES NATIONAL & INTERNATIONAL) CHOOSE ONLY ONE
37. ☐ UNDER 50
38. ☐ 50 - 99
39. ☐ 100 - 499
40. ☐ 500 - 999
41. ☐ 1,000 & OVER
42. ☐ DOES NOT APPLY

WHICH PERSONAL COMPUTER(S) DO YOU OWN/USE?
(CHOOSE ALL THAT APPLY)
43. ☐ MACINTOSH PLUS/SE/SE30
44. ☐ MACINTOSH CLASSIC SERIES/LC SERIES
45. ☐ MACINTOSH POWERBOOK SERIES/DUO SERIES
46. ☐ MACINTOSH II SERIES
47. ☐ MACINTOSH PERFORMA SERIES
48. ☐ MACINTOSH CENTRIS SERIES
49. ☐ MACINTOSH QUADRA SERIES
50. ☐ MACINTOSH WORKGROUP SERIES
51. ☐ IBM PC OR COMPATIBLE
52. ☐ OTHER
53. ☐ NONE

DO YOU RECOMMEND, BUY, OR APPROVE MICROCOMPUTER SOFTWARE AND/OR PERIPHERALS?
54. ☐ YES
55. ☐ NO

IF YES, PLEASE INDICATE FOR HOW MANY MACINTOSH COMPUTERS YOU HAVE THIS INVOLVEMENT.
56. ☐ 1 - 10
57. ☐ 11 - 25
58. ☐ 26 - 50
59. ☐ 51 - 100
60. ☐ 101 - 500
61. ☐ 501 +

*MACWORLD EXPO CONFERENCE SESSIONS ARE ON A FIRST-COME, FIRST-SERVED BASIS WITH NO GUARANTEED SEATING AND ARE SUBJECT TO CHANGE WITHOUT NOTICE. ALL REGISTRATION FEES ARE NON-REFUNDABLE. DO NOT STAPLE CHECK TO FORM. SEND COMPLETED FORM, WITH CHECK OR MONEY ORDER TO: MACWORLD EXPO, P.O. BOX 4010, DEDHAM, MA 02027. FOR OVERNIGHT PACKAGES SHIP TO: 260 MILTON STREET, DEDHAM, MA 02026.

Recycled Paper

ATTENDING MADE EASY

MACWORLD EXPO/BOSTON 1994, BAYSIDE EXPOSITION CENTER, 200 MOUNT VERNON STREET AND WORLD TRADE CENTER, 164 NORTHERN AVENUE.

TUESDAY, AUGUST 2 – THURSDAY, AUGUST 4, 10:00 A.M. - 6:00 P.M. AND FRIDAY, AUGUST 5, 10:00 A.M. - 4:00 P.M.

U.S. Attendees.

BADGES WILL BE MAILED ON OR ABOUT JULY 18. BE SURE TO CHECK BOX INDICATING WHERE BADGE SHOULD BE SENT.

International Attendees.

INTERNATIONAL BADGES (INCLUDING CANADIAN) WILL BE HELD FOR PICK-UP AT THE INTERNATIONAL PREREGISTRATION COUNTER AT BAYSIDE EXPO CENTER. FOR FEDERAL EXPRESS SERVICE, CHECK THE APPROPRIATE BOX BELOW AND ADD $45 TO YOUR PREREGISTRATION FEE. FILL IN YOUR EXACT STREET ADDRESS (NO P.O. BOXES) AND INCLUDE YOUR TELEPHONE NUMBER AND COUNTRY CODE. WE WILL FEDERAL EXPRESS YOUR BADGE DIRECTLY TO YOU. BADGE PICKUP HOURS ARE: AUG. 1, 11AM - 3PM; AUG. 2-4, 9AM - 6PM; AUG. 5, 9AM-4PM

Fly American Airlines and Save.

ENJOY SAVINGS ON APPLICABLE FARES WHEN YOU FLY AMERICAN AIRLINES, THE OFFICIAL AIRLINE OF MACWORLD EXPO. AMERICAN IS OFFERING ATTENDEES DISCOUNTS OF 5-10% ON MOST FARES. DIAL 800-433-1790 TO SPEAK WITH AN AMERICAN AIRLINES RESERVATIONIST AND REFERENCE STAR FILE #S0174AL. SAVINGS ARE AVAILABLE ON APPLICABLE FARES ONLY.

Car Rental Discounts From Alamo.

ALAMO RENT A CAR HAS BEEN APPOINTED THE OFFICIAL CAR RENTAL COMPANY FOR MACWORLD EXPO/BOSTON, AND SPECIAL DISCOUNTED RATES HAVE BEEN EXTENDED TO ATTENDEES. THESE RATES ARE AVAILABLE ONE WEEK BEFORE AND AFTER THE MEETING DATES AND INCLUDE UNLIMITED FREE MILEAGE. TO MAKE RESERVATIONS CALL ALAMO AT 1-800-732-3232 AND REQUEST GROUP I.D. #378360 AND RATE CODE GR. ADVANCE RESERVATIONS ARE REQUIRED.

SAVE UP TO $30 PRE-REGISTER BY JUNE 24!

SAVE $15 – $30 ON YOUR EXPO PACKAGE WHEN YOU PRE-REGISTER BY JUNE 24. WE'LL SEND YOUR BADGE EARLY TO HELP AVOID THE CROWDS.

Hotel Accommodations

PARTICIPATING HOTELS IN THE BOSTON AREA ARE OFFERING MACWORLD EXPO DISCOUNTS. TO RECEIVE THE PREFERRED RATE, CALL ONE OF THE HOTELS LISTED BELOW AND MENTION YOU'LL BE ATTENDING MACWORLD EXPO. THERE ARE A LIMITED NUMBER OF ROOMS AVAILABLE AND THEY SELL-OUT QUICKLY. MAKE YOUR RESERVATIONS BY JUNE 20 FOR THE BEST SELECTIONS. PRICES REFLECT SINGLE AND DOUBLE OCCUPANCY. IF YOU ARE RESERVING 10 OR MORE ROOMS, YOU MUST SUPPLY THE HOTEL WITH A ROOMING LIST AND A NON-REFUNDABLE DEPOSIT FOR THE FIRST NIGHT, NO LATER THAN JUNE 20.

Services for the Physically Challenged.

WE'RE COMMITTED TO ENSURING THAT OUR PHYSICALLY CHALLENGED ATTENDEES RECEIVE ALL THE SERVICES THEY NEED TO MAKE THEIR SHOW VISIT ENJOYABLE. CALL US AT 800-945-3313 FOR DETAILS.

Pre-recorded Information.

FOR PRE-RECORDED INFORMATION ABOUT MACWORLD EXPO/BOSTON, CALL THE MACWORLD EXPO INFORMATION HOTLINE AT 617-361-3941. 24-HOURS PER DAY, SEVEN DAYS A WEEK.

Early Bird Registration.

MISSED THE PRE-REGISTRATION DATE? YOU CAN STILL REGISTER BEFORE THE START OF THE SHOW! ON-SITE EARLY BIRD REGISTRATION IS FROM 11:00 A.M. - 3:00 P.M. ON AUGUST 1 AT THE FULL REGISTRATION RATES OF $150 FOR ALL CONFERENCE SESSIONS AND EXHIBITS, AND $40 (CASH ONLY AT THE DOOR) FOR EXHIBITS-ONLY ADMISSION.

MACWORLD EXPOSITION

HOTEL	SHUTTLE	SINGLE/DOUBLE	TELEPHONE
57 PARK PLAZA 200 STUART ST., BOSTON, MA 02116	B/C	$115/$125	(617) 482-1800
BACK BAY HILTON 40 DALTON ST., BOSTON, MA 02115	C	$150/$170	(617) 236-1100
BOSTON MARRIOTT COPLEY 110 HUNTINGTON AVE., BOSTON, MA 02116	C	$179/$179	(617) 236-5800
BOSTON MARRIOTT LONG WHARF 296 STATE ST., BOSTON, MA 02109		$230/$250	(617) 227-0800
BOSTON PARK PLAZA 64 ARLINGTON ST., BOSTON, MA 02116	B/C	$131/$151	(617) 426-2000
COLONNADE HOTEL 120 HUNTINGTON AVE., BOSTON, MA 02116	C	$170/$190	(617) 424-7000
COPLEY PLAZA 138 ST. JAMES AVE., BOSTON, MA 02116	C	$179/$199	(617) 267-5300
FOUR SEASONS 200 BOYLSTON ST., BOSTON, MA 02116	B/C	$242/$264	(617) 338-4400
GUEST QUARTERS HOTEL 400 SOLDIERS FIELD RD., BOSTON, MA 02134	H	$155/$165	(617) 783-0090
HARBORSIDE HYATT 101 HARBORSIDE DR., BOSTON, MA 02128	H	$175/$195	(617) 568-1234
HILTON AT DEDHAM PLACE 95 DEDHAM PLACE, DEDHAM, MA 02026	H	$125/$125	(617) 329-7900
HOLIDAY INN GOVERNMENT CENTER 5 BLOSSOM ST., BOSTON, MA 02114	B	$149/$165	(617) 742-7630
HYATT REGENCY CAMBRIDGE 575 MEMORIAL DRIVE, CAMBRIDGE, MA 02139	H	$165/$185	(617) 492-1234
LE MERIDIEN HOTEL 250 FRANKLIN ST., BOSTON, MA 02110	B	$210/$210	(617) 451-1900
LENOX HOTEL 710 BOYLSTON ST., BOSTON, MA 02116	C	$150/$170	(617) 536-5300
LOGAN AIRPORT HILTON LOGAN INTERNATIONAL AIRPORT, E. BOSTON, MA 02128		$140/$160	(617) 569-9300
OMNI PARKER HOUSE 60 SCHOOL ST., BOSTON, MA 02108	B	$145/$165	(617) 227-8600
RITZ-CARLTON HOTEL 15 ARLINGTON ST., BOSTON, MA 02117	B/C	$210/$220	(617) 536-5700
ROYAL SONESTA 5 CAMBRIDGE PKWY, CAMBRIDGE, MA 02142		$145/$145	(617) 491-3600
SHERATON BOSTON HOTEL & TOWERS 39 DALTON ST., BOSTON, MA 02199	C	$155/$170	(617) 236-2000
SHERATON TARA BRAINTREE 37 FORBES RD., BRAINTREE, MA 02184	H	$119/$119	(617) 848-0600
SOUTH BAY HOTEL *(FORMERLY HOWARD JOHNSON'S)* 5 HOWARD JOHNSON PL., BOSTON, MA 02125	H	$80/$90	(617) 288-3030
SWISSOTEL ONE AVE. DE LAFAYETTE, BOSTON, MA 02111	B	$159/$169	(617) 451-2600
TREMONT HOUSE 275 TREMONT ST., BOSTON, MA 02116	B	$110/$125	(617) 426-1400
WESTIN COPLEY 10 HUNTINGTON AVE., BOSTON, MA 02116	C	$185/$205	(617) 262-9600

*LEGEND: (B) HOTEL IS WITHIN WALKING DISTANCE OF BOSTON COMMON SHUTTLE LOCATION.
(C) HOTEL IS WITHIN WALKING DISTANCE OF COPLEY SQUARE SHUTTLE LOCATION.
(H) HOTEL IS PROVIDING ITS OWN SHUTTLE TO MACWORLD EXPO.

WANNA SEE WINDOWS SCREAM ON YOUR POWER MAC?



So you finally get your hands on the hottest new Mac and what happens?

Somebody insists that you run Microsoft Windows™ applications.

Don't despair. Just double click on SoftWindows™ **and hang on tight.**

You see, SoftWindows not only lets you use your Mac as a Mac, it also lets you **run thousands of popular Windows programs**—as fast as a 486SX.

You can run DOS programs, too. Not to mention PC network applications such as NetWare, LAN Manager and TCP/IP.

How can SoftWindows be so utterly compatible? Because it **includes Windows 3.1 and MS-DOS® 6.2,** optimized to run at top speed.

And since both DOS and Windows are preinstalled, you don't have to put up with tedious installations.

With SoftWindows, you can copy and paste between PC and Mac applications. You can even **use Macintosh peripherals**—CD-ROMs, printers, modems and more—with PC programs.

Call us today at **800-848-7677 Dept. B.** Or visit your dealer. What you discover will blow you away.

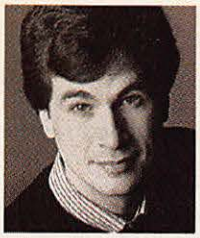
SOFT WINDOWS

Windows Compatibility for the Power Macintosh.

Insignia®

In Europe, call (44) 494 459426.

Circle 68 on reader service card



BY DAVID POGUE

Skinflint Software

Cheapie shareware substitutes for pricey programs

THE WRIGHT BROTHERS BUILT their baby biplane using borrowed bicycle bolts. Mary Jacobs, inventor of the brassiere, manufactured her initial inventory out of handkerchiefs and ribbon. Apple Computer began as a couple of guys in a garage. In fact, with the possible exceptions of Claris Corporation and Paul Newman's food company, just about every famous business alive today had to scramble through its first lean, makeshift years.

Nowadays, of course, "roughing it" entails different sorts of sacrifices. You endure curly fax paper instead of plain paper. You schedule FedEx packages for *afternoon* delivery. And maybe—just maybe—you use shareware instead of the high-priced commercial stuff.

Shareware is try-before-you-buy software. If a program strikes your fancy, the International Honor System compels you to mail a check directly to the programmer. Why get involved with such an unregulated, underground market? Because the price of a commercial program covers such frills as packaging, advertising, tech support, and taxes. A shareware programmer's most crippling costs, on the other hand, are Van Halen tapes and pizza. As a result, you pay only $15 or $30 for the end product.

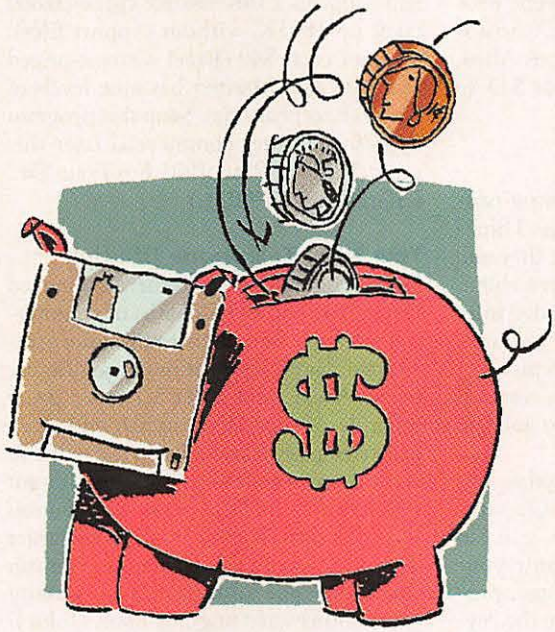
This year's annual *Desktop Critic* shareware roundup features programs that are obviously modeled on big, expensive business software. Shareware programs are not generally *better* than the commercial alternatives, but in many cases they're similar—and they're always cheaper. (If you have a modem, you can get this stuff from, for example, the Macworld Online area of America Online. If you have no modem, use the contact info provided herein.)

PowerBar 1.1.1

The Mac's halls of history are littered with attempts to out-Finder the Finder—to iconize the icons. We've seen Tiles, At Ease, the Performa's Launcher, Applicon, and Square One, the most versatile and successful of all.

PowerBar is Square One with a twist. It's a resizable, reshapable bank of icon tiles (see "Hanging Out in the Bar"). You install your favorite icons—files, folders, programs, desk accessories, aliases, control panels, and the like—on the tiles. Once you're in PowerBar, you can open an icon with one idiot-proof click of the mouse. PowerBar's ease-of-use masterstroke: you install, rearrange, and move the palette icons by simply dragging them around.

PowerBar's list of secondary features would fill a CD-ROM. You get a floating status bar showing gauges for memory, disk space, and (for PowerBooks) battery juice; instant creation or repair of aliases; a nifty window-management option (autohide when you switch programs, for instance); and single-click tiles that restart, shut down, empty the Trash, put selected icons into the Trash, and so on. My personal favorite: you can install tiles that, when clicked, execute the QuicKeys macros of your choice.



That last feature is, again, shades of Square One ($74); but as Apple might say, PowerBar does more and costs less ($25). Yes, I wish PowerBar would not hide its icons' names; and yes, I wish it didn't conflict with PopupFolder. But it's staying on my screen anyway. (Scott Johnson, 2812H Macintosh Ln. [really!], Maineville, OH 45039.)

Town Meeting 2.0

When you drive onto the information superhighway, the Mac screen is your windshield, and you carry no passengers. In the age of anonymous online encounters, doesn't anybody worry about the loss of face-to-face human contact?

Certainly not *Fortune* magazine, which recently extolled the virtues of electronic-meeting software. Nor IBM, which sells just such a program for $50,000. Nor Adam Stein, who wrote a shareware version.

With Town Meeting, you and the other meeting participants remain comfortably at your desks. Everyone communicates by typing. As the discussion goes on, the comments scroll up your screen like a movie script, much as in the chat rooms of America Online. It's fast, it's simple, and it forces participants to be concise. According to *Fortune*, it also encourages shy people to speak up. And—because you can choose to be anonymous—it lets participants toss out risky ideas without fear of ridicule or subsequent snubbing at the watercooler.

OK, maybe the future won't be so bad—as long as we get up once a month to wander around the office and remember what everyone looks like. (Adam Stein, 303/872-8651; $24.98; 5-, 10-, and 20-user packs available from $112.98 and up. Prices will double in 1995.)

Do It All 3.020

This scheduling/reminder/to-do–list manager is gorgeous, fast, and simple to use. You can note a scheduled appointment by dragging through a vertical time line, exactly as you can in Now Up-to-Date and its rivals. (You cannot, how-

continues

WARD SCHUMAKER



Hanging Out in the Bar PowerBar is a launching pad not only for icons, but also for Mac functions such as Empty Trash, Restart, and Hide Other Applications.

ever, reschedule an appointment by dragging its description.)

One brilliant exclusive feature: you can assign priority levels to a to-do–list item that increase over time. For example, today I might assign a priority level of 4 to "Eat leftover ziti in fridge." But two weeks hence, as the ziti completes its gradual disintegration, Do It All begins waving that message wildly at the top of the list, with an urgency level of 9.

There's also an Appointment option I wish every similar program had: you don't have to painstakingly type in a start and end time for every appointment. Instead, you can click on an Anytime check box, as you'd do for such day-oriented reminders as "Jennifer's birthday," "Vote today!," and "Throw out ziti."

Other Do It All features include alarms; one-step, recurrent-event programming; and online help. (J. Christopher Bell, 1830 Austin Ave., Los Altos, CA 94024; $40 per business, or $15 to $35 for individuals.)

Idealiner 3.4

What ever happened to outlining programs, anyway? Remember Acta? ThinkTank? More? In the late 1980s, they and Madonna were all anybody talked about.

Those programs may have faded from prominence, but the concept of outliners is still golden. Any structured piece of writing or speaking is easier to create if you put its skeleton together first and add the flesh later.

Idealiner is a relic; its last update was in 1990. But it offers many of the same features as the pricier dinosaurs: you can "collapse" subpoints to view only your main headings; you can rearrange, promote, and demote headings from the keyboard; and you can double-click on any heading or subheading to open a text window in which to write the body of your speech, thesis, or article.

Ultimately, though, Idealiner's generous import and export options are its best feature. The program allows you to save any portion of your outline as a correctly numbered and indented MacWrite or text file—which, of course, you can then open with any word processor alive. Perhaps the only feature that users of More will miss is the ability to set up different fonts for each level of heading. (Free; Clifford Story; currently available only online, as far as I know.)

Mariner 2.16

There was this witty Microsoft ad that said something like, "99 out of 100 spreadsheet owners use Excel. What are we doing wrong?"

If you're willing to be one of the rebel 1 percent, you can save mucho moolah. Mariner looks and works exactly like Excel: it comes with 75 functions, 9 graph types, 3-D worksheets, split panes, individual cell fonts, resizable column widths and heights, a floating tool bar, named cell references—the works. And you can export your spreadsheet (sans graphs) to Excel. It's so complete that the Read Me file's apologetic note stating "[Mariner] does not yet support color, 3-D charts, macros, or an external command language" is almost comically forgivable.

In fact, it could be argued that for plain-vanilla number crunching, Mariner is actually superior to Excel. Mariner runs in 763K of memory (Excel uses 2048K) and requires 236K of disk space (Excel takes up 1885K, without support files). Mariner costs $40 (Excel is street-priced at $300). And Mariner has nine levels of Undo (Excel has one). Snap this program up before it goes commercial later this year. (William Paar, 1903 FoxTrain Dr., LaGrange, KY 40031.)

Two Nifty Telephone Utilities

Some programs I describe here are indeed Davids battling the Goliaths of commercial software. But others fulfill a more traditional shareware function: they fill a tiny niche. AreaCodeFinder 3.1.0 is a great example of this. It's a stylish and sleek one-trick pony that looks up a city if you know the area code—or vice versa. It's got 2400 cities in its little brain, and you can add your own. It even blinks your target city's location on a U.S. map, so you can check the time zone and avoid waking your mother at an ungodly hour. (John J. Calande III, 619 S. Clifton St., Philadelphia, PA 19147; $8.)

Talk about nichey. The puny program called 800-SAY-WHAT is on a miniature mission from God: to translate those mnemonic but irritating-to-dial 800 numbers, like 800-SOS-APPL or 800-CAR-RENT, into normal numbers. Crude but fast. (William Modesitt, 2620 Baldwin Ave., #204, Makawao, Maui, HI 96768; $5.)

Sample Editor 1.0.3

For years, Apple has waffled on its dedication to the Mac as a tape recorder. Exhibit A: its on-again, off-again practice of including a microphone with each computer. (At the moment, it's off again.)

If everybody knew all about Sample Editor, things might be different. This shareware program gives your Mac a visually stunning sound-editing interface, much like the high-priced $295 SoundEdit Pro from Macromedia. As long as you have System 7, a color monitor, and not too many extensions, you can enjoy Garrick McFarlane's polished piece of powerware.

Using Sample Editor, you can cut, copy, and paste snippets of sounds you have recorded; touch them up with crossfades, reverb, and other effects; play them backward; speed them up or slow them down; raise James Earl Jones's voice to the pitch of Cyndi Lauper's; zoom in and study the actual waveform of a sound; and so on. And what does the kindly Englishman want in exchange for this software studio? "E-mail or a small cash donation," he says. Think you can manage that? (Garrick McFarlane; available only online.)

The Upshot

This is not your father's shareware. No longer should you think of shareware as the domain of first-time BASIC programmers and game junkies. Much of today's shareware is solid, polished stuff, featuring slick 3-D interfaces, balloon help, and quick performance.

Ironically, as shareware becomes more sophisticated, the commercial software deal is simultaneously getting *worse*. Used to be that you'd buy a commercial package because of the support it offered (phone help and all that). But today, you might wait on hold for 30 long-distance minutes. And, in a trend perpetuated recently by Microsoft, Claris, Quark, and many other companies, you might have to *pay extra* for the privilege of phone support—as much as $25 per call. A shareware author, on the other hand, is likely to respond to your frantic E-mail within a day. For free.

Do you, too, find the pay-for-support trend revolting? Download some shareware, send in a few dollars, and start doing a little revolting of your own. **m**

Contributing editor DAVID POGUE is the author of IDG Books Worldwide's *Macs for Dummies, More Macs for Dummies, Le Mac Pour Les Nuls, Macs für ~~Dumme~~ Anfänger, Usare il Macintosh Senza Fatica, Macintosh Para Leigos, Mac for Dosmere,* and the Japanese title, which this font doesn't have the right symbols for.

He eats your storage space

FOR LUNCH

and your money

FOR DINNER.



You're well acquainted with this megabyte-eating beast.

But perhaps you're not yet familiar with DynaMO™, the magneto-optical solution that eliminates the horrors of data storage.



Drive Specifications	
Capacity	128-230 MB
Data transfer rate	2.1 MB/s (max.)
Average seek time	30 ms (typ.)
Rotational speed	3,600 rpm

This compact little set-up will save you big. Like Syquest, you put an external drive on-line and save your files to removable, rewritable cartridges. But unlike Syquest, you don't have to break the bank each time around.

With DynaMO, you can use 128 and 230 MB industry standard 3.5-inch cartridges. The cartridges aren't vulnerable to the everyday abuse that might otherwise do in your data. In fact, Fujitsu cartridges are so reliable we back them with a lifetime warranty.

There's nothing frightening about setting-up DynaMO either. You just plug the drive into your PC or Macintosh.

Get the data on DynaMO by calling **1-800-831-4094.** Or request information by fax at 1-408-428-0456 (document 1368).

We'll show you how to enjoy some monstrous savings.

FUJITSU

COMPUTERS, COMMUNICATIONS, MICROELECTRONICS

Circle 202 on reader service card

© 1994 Fujitsu. All rights reserved. DynaMO is a trademark of Fujitsu Computer Products of America, Inc. All brand names and product names are trademarks of their respective holders.

DisplayMaker PROFESSIONAL

DisplayMaker Professional shown with Big Ink high-capacity ink system.

HERE'S PROOF...



DisplayMaker Starting At Only $19,995

...WHY MORE THAN 700 SERVICE BUREAUS HAVE CHOSEN DISPLAYMAKER™

ColorMark System

Super-large-format, PostScript™ color printing. That's what you get with LaserMaster's® Big Color™ Digital Printers. It's easy to see why hundreds have chosen DisplayMaker and DisplayMaker Professional—the proof is in the product and the performance.

Proof—The Product

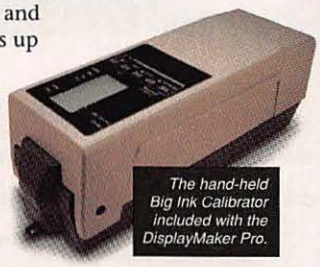
With output that's 36 inches wide by almost any length, the DisplayMaker line offers the best and easiest way to produce Big Color prints. And it has the features professionals demand:

- Photographic-quality output
- ColorMark™ Color-Management System
- PostScript Level 2 compatibility
- 235 pre-installed typefaces

Plus, DisplayMakers attach quickly to Macintosh® and IBM®-compatible computers and print directly from all popular illustration, photo-manipulation, and desktop-publishing applications.

Proof—The Performance

When it comes to high-volume printing, nothing beats DisplayMaker Pro's performance. The Big Ink™ Delivery System increases its ink capacity 10-fold and reduces ink costs up to 70 percent! And with DisplayMaker Pro's Advanced Color Server, you're in control of print jobs and consumables management.



The hand-held Big Ink Calibrator included with the DisplayMaker Pro.

It's easy to see why LaserMaster's DisplayMaker printers are the choice of so many professionals. Prove it to yourself and call LaserMaster today! Ask about our complete, fully integrated Big Color WorkStation, too.

"I waited about three days to make up my mind. I waited two days too long. I wasted two days worth of profits."

Tom Welsch, President
Visual Horizons, Inc.

"This is the first product that I have had in my store that I can literally walk down the street and sell to every business."

David Kempton, Manager
Kinko's Copies

"After only six weeks of actual production, I have already paid for half of my initial investment, if I include all the mounting and laminating I have done as a result of the output."

Robert Evans, President
EPI Graphics

1-800-688-8342

or 612-944-9330

Fax: 612-944-1244

Ask For Dept. 76A

LaserMaster® Color Technology Division

The Professional's Choice™

© 1994 LaserMaster Corporation, 6900 Shady Oak Road, Eden Prairie, MN 55344. LaserMaster and the LM logo are registered trademarks; Big Color, DisplayMaker, ColorMark, The Professional's Choice, and Big Ink are trademarks of LaserMaster Corporation. PostScript is a trademark of Adobe Systems, Inc. This product incorporates the PowerPage interpreter from Pipeline Associates, Inc. All other product or brand names are trademarks of their respective holders. DisplayMaker output is not intended for extended use in direct sunlight. Specifications and prices subject to change without notice. Prices in U.S. dollars.

Circle 49 on reader service card



BY STEVEN LEVY

Optimism about the Net

And now, the good news on hitting 100

THE ANNUAL COMPUTERS, FREEDOM, and Privacy conference is a gathering of the best and brightest observers, critics, and hands-on pioneers of the digital frontier. Shared among them is a belief that computers, particularly those linked by networks, should contribute to public well-being and not be party to an abrogation of our privacy or our rights. The topics are stimulating and the informal conversations provocative. But I left Chicago, the site of this year's convocation, somewhat depressed. Once again, the focus of the event was a negative one—fighting the so-called Clipper chip, a scheme concocted by the National Security Agency (NSA) that would rob us of the ability to keep our phone calls and E-mail messages hidden from government eyes.

The Clinton administration has endorsed the Clipper, which attempts to set a strange sort of cryptographic standard wherein the government guarantees itself a key to unlock otherwise private conversations. A year ago I covered the odious Digital Telephony bill—an initiative requiring that the entire communications structure of the nation be "dumbed down" to give the government continued ease in wiretapping our phones and reading our faxes. With the Clipper, the Clinton-Gore team has endorsed an even more repressive version of the proposed legislation.

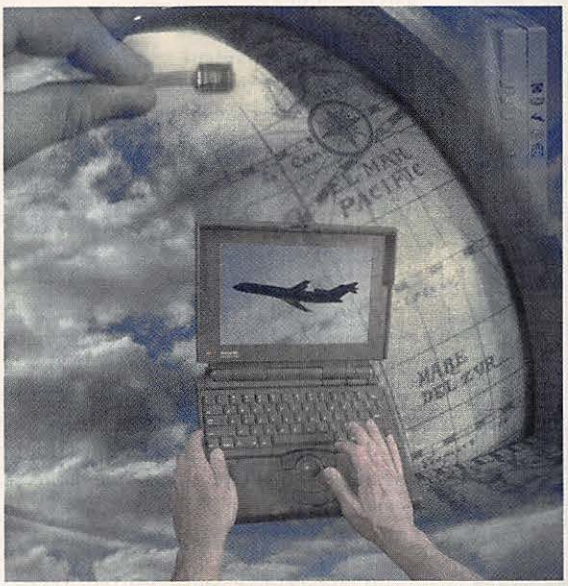
So I suppose I should sound the alarm again and urge you to write your congressional representatives (cc'ing your letters to Senator Patrick Leahy and Representative Don Edwards, who are holding subcommittee hearings on these matters). And for good measure, I should also suggest that you drop a note to your legislators urging them to support the Cantwell bill, which seeks to liberate cryptography from its current status as a munitions item subject to draconian export regulations. But as I sat among the CFP attendees, listening to the general counsel of the NSA trill the virtues of the Clipper, I found myself surprisingly optimistic.

PHILIP KAAKE

Sunny-Side Up

This issue marks my 100th column for *Macworld*. (Reminder to self: send picture to Willard Scott!) My first column, in April 1986, was an attack on Lotus Jazz. Through the years, I've compiled a record of peevish assessments: The Macintosh Portable. The original StyleWriter. John Sculley's ego. I really hadn't noticed how dour was my demeanor until the day when software developer Dave Winer asked me in total seriousness, When was the last time I *liked* something? (And this was before my not overly favorable review of Winer's product Frontier.)

His point was well taken. Though I am cynical by nature, I am a lover of good technology. So as I reach the century mark, it's appropriate to devote this space to a phenomenon I thought about as I listened, spoke, and networked at CFP—the key development in the computer world since I began addressing my readers as The Iconoclast eight-plus years ago, and one that makes me uncharacteristically upbeat.



I am referring to the best imaginable consequence of easy-to-use, powerful computers: the emergence of an electronically linked global community. The greatest human work-in-progress these days is the variegated edifice of connections called cyberspace. But some people, including some speakers at the CFP conference, worry that the very popularity of the Internet may be its undoing. Millions of people are arriving as new members of services such as America Online and CompuServe; more will be attracted by newer nets such as Apple's forthcoming eWorld. Increasing numbers of these newcomers are finding their way onto the daddy of all nets, the Internet. Whereas computer networks to date have been relatively civilized arenas, this historic digital immigration threatens to make things downright unfriendly. Call it the urbanization of cyberspace. Will the influx erode the convivial culture?

I don't think so. In fact, I anticipate the opposite—that the open, exploration-friendly nature of the Net is more likely to change the newcomers than the other way around. That prospect is delicious.

Lessons of History

To help you understand why, let me give you a brief history of cyberspace. It began with a government project called the ARPANet, a network that allowed a group of computer-science–oriented universities and institutions to exchange files and notes among themselves. Its designers were quickly astonished by an unexpected phenonemon—users took advantage of its efficient communications facilities to establish informal yet deep communication of a *human* nature. The ARPANet became a cultural transmitter of sharing-oriented values, particularly those of MIT's Artificial Intelligence lab. As the network grew to many more sites from 1969 to 1989, it preserved the best of MIT's hacker culture and really became the focus of computer culture in general.

In the late 1970s, an important tributary to that culture opened: a decentral-

continues

HEADS, IT'S REAL. TAILS, IT'S FAKE.



It's your choice. A little more than 50 percent of all business software in use today is pirated. If you buy it, you could end up with virus-ridden, phony software that has no documentation or product support.

Selling or copying pirated software without authorization is against the law, with severe criminal and civil penalties including imprisonment of up to five years, fines of up to $250,000, or both. If you suspect the sale or use of pirated software, call the BSA Anti-Piracy hotline:

(800) 688-BSA1 (2721)

BSA Business Software Alliance

© 1993 Business Software Alliance. All rights reserved.

ized archipelago of privately operated, no-cost bulletin board systems. These were typically set up by people whose main goal was establishing a free flow of information and software. So by the time the first commercial systems, including The Source and CompuServe, opened in the 1980s, the tone of cyberspace was set. Those commercial nets that ignored the protocols of open communications and free exchange (for example, the first iteration of Prodigy) did so at some risk.

In the 1990s, the character of the Net—from conferencing systems such as The WELL in the San Francisco Bay Area and Echo in New York City, to America Online, to the Internet itself—has become well established. While the verbiage can get pretty heated in cyberspace, there is a solid focus on the free exchange of information. This is best exemplified by the fact that one can cruise through various networks picking up valuable shareware, freeware, and priceless nuggets of information for little or no cost. And when someone posts a request for help on CompuServe or a Usenet group, the normal response is a flood of assistance from altruistic users.

Despite the invasion by hordes of outsiders and tourists, I think this spirit will continue.

Items on the Menu

Is my optimism unjustified? I don't think so. Consider a fascinating article by Natalie Glance and Bernardo Huberman of Xerox PARC that appeared in the March issue of *Scientific American*. The subject was the various behavioral possibilities in the so-called Unscrupulous Diner's Situation. This occurs when a group of people decide in advance to split a restaurant check evenly. This presents each individual with a dilemma: Should you order lobster and Dom Perignon, knowing that the high cost will be amortized among several diners? Or should you order chicken and a house wine to keep costs down? The optimal solution seems to be for everyone to order moderately; then the bill for all will be low.

Remarkably, the Xerox PARC researchers found that in both human studies and computer simulations, cooperation works. The biggest threat to cooperation is the fear that some freeloader (known as a "defector") will eat high on the hog, while you with your peanut-butter sandwich wind up paying for the louse. This makes you a "sucker," and no one wants to be a sucker. But in most cases, especially when there is reason to believe that the group will dine together again, people take the hopeful step of ordering reasonably—as long as they have even a slight indication that their fellow diners will also do so.

This hypothetical situation seems to exist for real on the global network. Cooperative behavior in cyberspace is firmly established; in fact, so many people donate their time and product for little or no money that the sucker factor has been virtually eliminated. Potential defectors—those who would greedily scoop up (or screw up) the efforts of others while failing to contribute themselves—have to violate the communal spirit very consciously. Can they do that? Sure. But then those defectors forfeit one of the main benefits of the Net—the sense of connectedness that comes from participating in such a unique cooperative effort. I think this factor will ensure that the Net's openness will remain self-sustaining.

There are other factors, too. Did you ever notice what happens when someone posts a nasty flame on a conferencing system, something really out of line? While it sometimes evokes a like response, more often than not observers step in and warn the offending flamer that he or she should back off. (And almost always, the original ranter posts an apology for the rash message.) Likewise, a particularly astute commentary commonly draws a series of digital pats on the back ("Great stuff, Roger!"). Good citizens of the Net act as a sort of antibody, rising from the data muck to cluster around an invader and limit the damage. And if you view the Net as an organism, you'll see all kinds of ways that its immune system resists bad-attitude postings from newcomers and malcontents. For instance, to squelch the most virulent flamers, some people have designed "bozo filters" to allow users to literally tune out those who simply aren't worth listening to.

Bigger than All of Us

I'm not saying that everything is sweetness and light on the Net, or that digital vandals and just plain selfish people won't perturb the rhythms of cyberspace. But the Net will handle it. The Net, really, is a stable system that's bigger than all of us and has ways of maintaining its positive equilibrium. And that is what makes it so exciting—I can't really think of an antecedent for the Net. Despite the unpleasant distractions of the Clipper chip and Digital Telephony, we're breaking new ground here. And there's no telling where this momentum will take us. **m**

STEVEN LEVY's latest book is *Insanely Great: The Life and Times of Macintosh, the Computer That Changed Everything* (Viking, 1994).



Now you can print from your Macintosh™ to over 1,000 PC-compatible printers- even if you're sharing one on a network.

PowerPrint's cable-and-software package gives you instant access to just about any laser, inkjet, dot matrix, color, or fast wide-carriage printer. So you can have the power to print whether you're on the road with your PowerBook™, or using an old PC printer at home.

PowerPrint Costs Less Than $150.
And includes features like built-in spooling, scaling, and custom paper sizes. It's compatible with TrueType™ and Adobe Type Manager™ fonts.

Available in Network Versions.
PowerPrint/LT™ for LocalTalk™ networks. PowerPrint/NW™ for Novell® NetWare® printing services.

Call 800-663-6222 for information, or contact your dealer.

Upgrade to 2.5 and Get the Power of Color!

Why you should upgrade from Grappler™ or MacPrint™, for **$75.**	PowerPrint 2.5 is much faster, provides access to color printers like the Canon BJC-600 and the HP DeskJet 550C. Plus, features like better quality, background printing and greater compatibility.
Current owners of PowerPrint can upgrade for **$35.**	And get 32-bit color and grayscale printing, print preview and support for new printers.

GDT SOFTWORKS INCORPORATED
4664 Lougheed Highway
Suite #188
Burnaby, BC
Canada V5C 6B7

800-663-6222
604-291-9121
604-291-9689 (fax)
AppleLink:GDT.MKT

MacUser 100 · MacWEEK Editors' Choice · yes Runs with NetWare · 4 Apples MacHome Journal



PowerPrint™

THE MACINTOSH PRINTING SOLUTION™

All product names are trademarks or registered trademarks of their respective holders.

Circle 32 on reader service card

Circle 42 on reader service card

EXPLORE the INTERNET!

FREE



DELPHI is the only major online service to offer you full access to the Internet. And now you can explore this incredible resource with no risk. You get 5 hours of evening/weekend access to try it out for free!

Use DELPHI's Internet mail gateway to exchange messages with over 20 million people at universities, companies, and other online services such as CompuServe and MCI Mail. Download programs and files using **FTP** or connect in real-time to other networks using **Telnet.** You can also meet people on the Internet. **Internet Relay Chat** lets you "talk" with people all over the world and **Usenet News** is the world's largest bulletin board with over 4500 topics!

To help you find the information you want, you'll have access to powerful search utilities such as "Gopher," "Hytelnet" and "WAIS." If you aren't familiar with these terms, don't worry; DELPHI has hundreds of expert online assistants and a large collection of help files, books, programs, and other resources to help get you started.

Over 600 local access numbers are available across the country. Explore DELPHI and the Internet today. You'll be amazed by what you discover.

FIVE HOUR FREE TRIAL!

Dial By Modem 1-800-365-4636, Press return until you get a prompt
At Username, enter JOINDELPHI. At Password, Enter MCW47

Offer applies for new members only. A valid credit card is required for immediate access. Other restrictions apply. Complete details are provided during the toll-free registration.

Attention Current Internet Users: See what DELPHI can offer you! Stock quotes, Grolier's Encyclopedia, newswires, and hundreds of other services are just a few keystrokes away. Telnet to delphi.com and enter the username and password above for a free trial.

DELPHI
INTERNET

Questions? Call 1-800-695-4005.
Send e-mail to INFO@delphi.com

Circle 173 on reader service card



BY DEBORAH BRANSCUM

Great Mac Resources

Get more from your computer with these useful tools

THE TIME HAS COME FOR THE fifth annual roundup of terrific Mac resources. Once a year I like to share information on services, publications, and software that aid and abet computing. Some are specifically aimed at Mac owners; others cover broader territory but are still interesting. This year's crop includes a publication for ClarisWorks users, news services that bring the latest to your desktop, and books that help you stay healthy.

ClarisWorks in Detail

ClarisWorks users have a friend in *ClarisWorks Journal*, an unusually helpful publication from the ClarisWorks Users Group of Plymouth, Michigan (313/454-1969, fax 313/454-1965). This 24-page newsletter, published ten times a year, offers clear, specific tips on using this best-selling application. The February and March issues are packed with great information, including a database primer on using dates in calculations; spreadsheet tips; a section for teachers on creating reports and tests with ClarisWorks; and an article written by Robert Duvall, author of the charting module in ClarisWorks, on how to use the program's undocumented charting features.

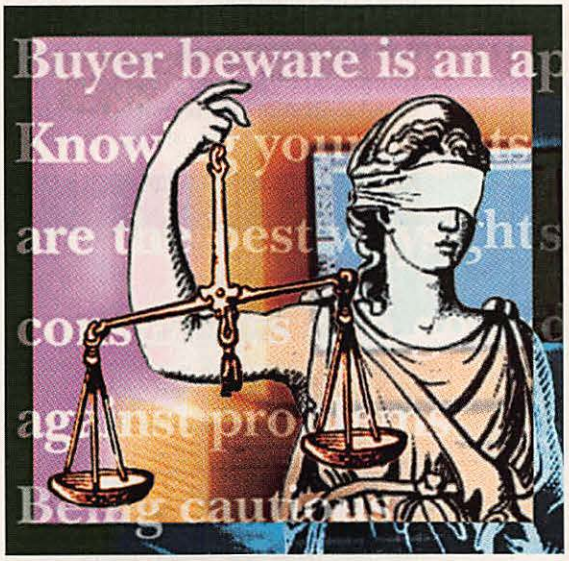
CWUG also offers monthly disks of shareware fonts, graphics, and ClarisWorks templates. Shareware disks ($8 each) and a public-domain catalog ($5) are available to nonmembers. CWUG's 10,000-plus members worldwide don't meet, but they do get benefits such as a training-tape rental service and an active BBS (615/359-8238). One big advantage for members outside the U.S. is that they can order software products through CWUG, giving them access to U.S. programs at U.S. prices. *Macworld* readers in the U.S. can join for $29 annually; memberships outside North America are $48 annually ($71 for airmail).

Troubleshooting Tips

There are many good books on troubleshooting, and I cited several in last July's column. One I didn't cover then, but that's worth noting, is *Desperately Seeking Solutions: A Troubleshooting Guide to the Mac* (Hayden Books, 1993). Author Erica Kerwien, a tech-support maven, explains problems and solutions in clear, helpful prose. An especially useful feature is a list of questions covered in each chapter and where to find the answer ("Why can't I delete this file? page 117," for example). The $29.95 tome also includes a shareware disk with Disinfectant, SCSIProbe, TattleTale, Systems Errors DA, and System Picker.

News on Your Desktop

Individual, Inc., of Cambridge, Massachusetts (617/354-2230, 800/414-1000), offers two news services for tracking computer-industry developments (or anything else) right from your desktop. HeadsUp and First are news services geared toward individual and corporate users, respectively; they draw from some 300 information sources for daily, personalized news reports. The sources include 79 national newspapers (including the Knight-Ridder chain); several Canadian papers; and trade publications and wire services pertaining to business, law, finance, and health.



HeadsUp costs $29.95 per month for electronic delivery of 20 daily news briefs and one full-text article each business day. (A one-year subscription of daily briefs and 160 full-text articles costs $695.) The briefs are short synopses of articles that focus on 5 to 10 topics selected by a customer from a list of more than 700 (there is some overlap among topics). The areas covered include computer hardware and software, information services, data communications, energy, health care, semiconductors, telecommunications, and transportation. An additional full-text copy of any article is available for $4.95. HeadsUp users call a toll-free number to order the full article, which should arrive within 30 minutes of placing the order. Best of all, Individual offers a free, 30-day trial subscription to HeadsUp, so it's painless to check out the service.

First is designed for corporations and workgroups and should be useful for business folks who need to closely follow specific industry developments. Unlike Heads-Up customers, who select topics from a predetermined list, First customers can choose custom topics for their daily news. I used it, for example, to track PowerPC-related announcements. Subscription rates vary, depending on the type of service; an annual subscription fee of $6250, for instance, allows up to ten users to receive and share as many as 1250 articles via electronic mail (or via fax or Lotus Notes for different charges). First offers a brief trial service, as well as a three-month subscription.

A Guide to the Internet

A couple of years ago there were virtually no books about the Internet; now we have about a gazillion. Navigating the Internet to find the information you want can be difficult; *The Internet Yellow Pages* (Osborne/McGraw-Hill, 1994) makes this task much easier. This $27.95, 400-plus–page tome is organized alphabetical-

continues

ANDREW FAULKNER

PINPOINT YOUR PROSPECTS.

Advertisers interested in renting MACWORLD's Subscriber List, Please call Andrew Sambrook IDG List Services 1.800.343.6474 for MA 508.620.7718

ly, lists hundreds of Internet information sources by topic, and includes a master list of Usenet newsgroups.

The list is useful, but it's the pithy descriptions of the discussion areas—from agriculture to zoology—that make the *Yellow Pages* fun to read. It of course lists where to find the Macintosh discussions; but it also includes, for example, this must-know reference for Usenet's rec.arts.sf.tv newsgroup: "It's natural to feel like you can never get enough science fiction. Your mouth goes dry, your hands press continually on the remote control even though you know it will not make science fiction magically appear before you. You need a source or you are going to lose your mind. When you can't find it on the tube, seek your sci-fi television support group and get a quick fix."

Healthy Computing

Tips on using applications are helpful, but so are tips and tricks for safe computing Two new books offer just such advice.

ZAP! How your computer can hurt you—and what you can do about it (Peachpit Press, 1994) offers an overview of health issues that may affect computer users, including eyestrain, physical injuries, and monitor emissions. Author Don Sellers takes a sane approach to sometimes emotional issues. The book's abbreviated coverage means that much gets left out. But that's OK—this useful, friendly volume ($12.95) points readers to additional sources of information. (Peachpit is selling 77,000 copies of *Zap!* at cost to U.S. corporations until September 5. The minimum order is 30 books; call Hannah Onstad for details at 510/548-4393 or 800/283-9444.)

A book dedicated to helping prevent computer-related physical injuries is *Repetitive Strain Injury: A Computer User's Guide* (John Wiley & Sons, 1994). This $14.95 volume was written by physician Emil Pascarelli and Deborah Quilter, a writer who has experienced RSI (also known as cumulative trauma disorder). They suggest a seven-point program for treating and preventing injuries, offer advice on choosing a doctor, and list support groups and organizations that may be helpful. If you're in pain from using your computer, this book may help you understand why (you should consult your doctor before following its advice). The authors warmed my consumer-advocate heart with this prose: "Don't be a sucker. Don't buy keyboards . . . or gimmicky devices or accessories unless you are positive they are worth the cost—and preferably have been evaluated by a competent doctor or occupational therapist."

CD-ROM Madness

A La Jolla, California–based company is producing a fascinating, maddening exploration into CD-ROM publishing called think[an interactive]. Adhoc Technologies (619/551-0109) and editor-in-chief Aaron Singer describe think as a mainstream, interactive, multimedia magazine. It has many beautiful screens, and several so-called interactive sections are compelling or amusing. But the information in the premier issue is thin. The review section, for example, covers two record albums, the 1941 film *Citizen Kane*, and a book. The review of Larry McMurtry's book *Streets of Laredo* begins, "I wish I had something profound to say about *Streets of Laredo*." Me too. The opening "Reviews" screen is lovely, but it promises more than the content delivers. And I don't know whom to blame: the reviews have no bylines. Multimedia fans should still check out think—it's no threat to print media, but it's fun to explore.

Speaking of fun, last year I mentioned Owen W. Linzmayer's Cruel Mac Tricks. The disk grew into a book (with disk) called *The Macintosh Joker* (Hayden Books, 1993), which is equally useless to society and includes 11 new tricks. If you have an annoying sense of humor, this is the book for you. **m**

SERVICE HERO

Carolyn McLean of Buffalo was rescued recently by Dayna Communications. As a new employee at the State University of New York, she was confronted with two mysteriously nonfunctioning and possibly unregistered EtherPrint EtherTalk-to-LocalTalk converters. "Because I needed a fast solution in a public Mac lab on campus, I called Dayna on a Thursday to inquire about purchasing replacement boxes," writes McLean. Dayna's Derrick Hisatake told her the converters were covered by a lifetime warranty and shipped her new replacement converters that day. By Monday, the student lab was back in business. "I received excellent service from an extremely helpful employee."

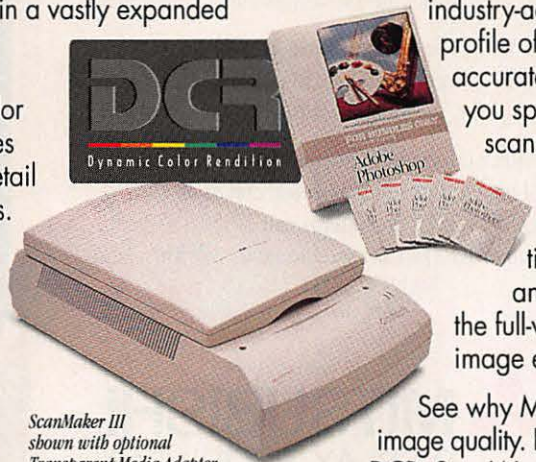
Send nominees for sainthood to *Service Heroes, Macworld,* 501 Second St., San Francisco, CA 94107, or via Internet (Branscum@AOL.com). Conversely, drop *Conspicuous Consumer* a line if a company is ignoring you.

Billions And Billions And Billions And Billions...of Colors.

Introducing the ScanMaker® III, the first 36-bit, single-pass, color flatbed scanner that's also the best value in the cosmos.

The ScanMaker III's 36-bit color scanning capability allows it to capture an astronomical 68 billion colors. It has an optical density that reaches 3.4, unprecedented for a flatbed scanner, which results in a vastly expanded dynamic range. What all this means is, that your scanned images will have smoother color gradations, denser color values and substantially increased detail in shadow and highlight areas.

Performing like scanners priced somewhere in the stratosphere, the ScanMaker III's scans are so sharp, you will actually reduce the amount of time spent in post-scanning software to sharpen images. And its optical resolution of 600 x 1200 dpi (enhanced through software to 2400 x 2400 dpi) is great for enlarging small originals.



ScanMaker III shown with optional Transparent Media Adapter for scanning transparencies up to 8" x 10".

For accurate scanned color, DCR™ (Dynamic Color Rendition), Microtek's award-winning color calibration/correction system calibrates the ScanMaker III to a photographic industry-accepted calibration target creating a custom profile of your specific scanner. This ensures the most accurate color possible as you scan an image, so you spend a lot less time adjusting the color of your scans to match your originals.

Windows users also get Microtek's ScanWizard™, a drag and drop application for instant image management, faxing and printing. The ScanMaker III also includes the full-version of Adobe Photoshop for complete image editing and color separations.

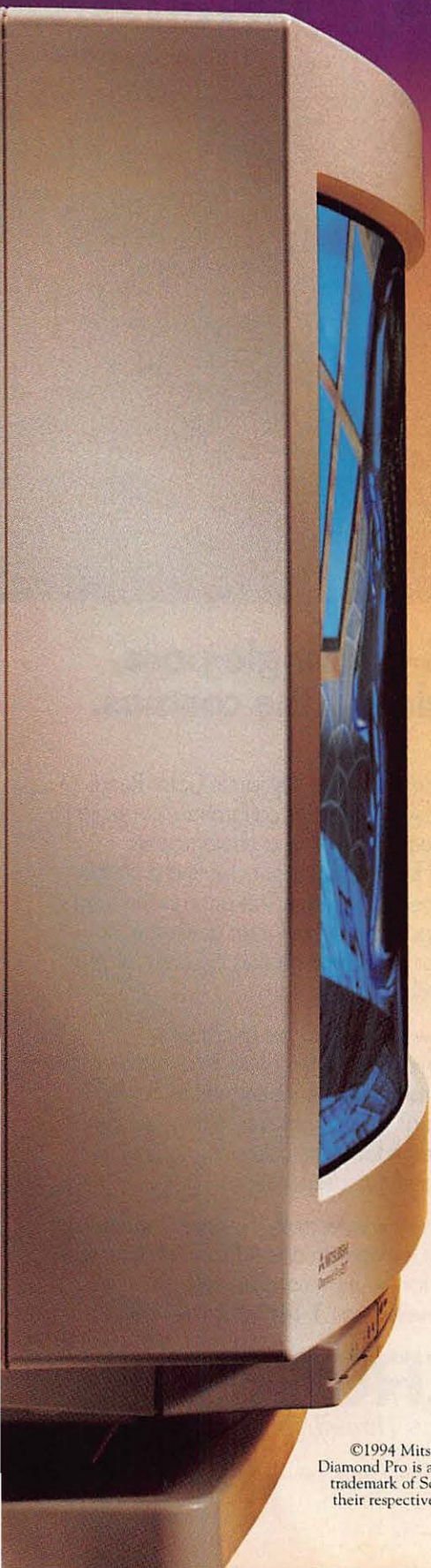
See why Microtek is the universally accepted leader in image quality. For more information about the ScanMaker III, DCR, ScanWizard, or for the name of your nearest authorized Microtek reseller, call **1-800-654-4160**.

MICROTEK
Better Images Through Innovation.

See Microtek at PC Expo/New York Booth #2226 June 28-30.

The following are trademarks or registered trademarks of their respective companies: Adobe Photoshop of Adobe Systems, Inc.; Windows of Microsoft Corporation; Microtek, ScanMaker, DCR, Dynamic Color Rendition, ScanWizard of Microtek International, Inc. All other trademarks or registered trademarks are the property of their respective holders. Specific software bundles are subject to change without notice. SMIIIEUV41594

WHAT LOOKS LIKE A TRINITRON® MONITOR, BUT IS BIGGER AND BETTER?



The Diamond Pro® 21T Featuring

DiamondTron™

A New CRT From Mitsubishi Electronics

Say good-bye to Trinitron. Mitsubishi's DiamondTron CRT ushers in a new era in high-performance monitor design for all high resolution Macintosh® II and Quadra® applications.

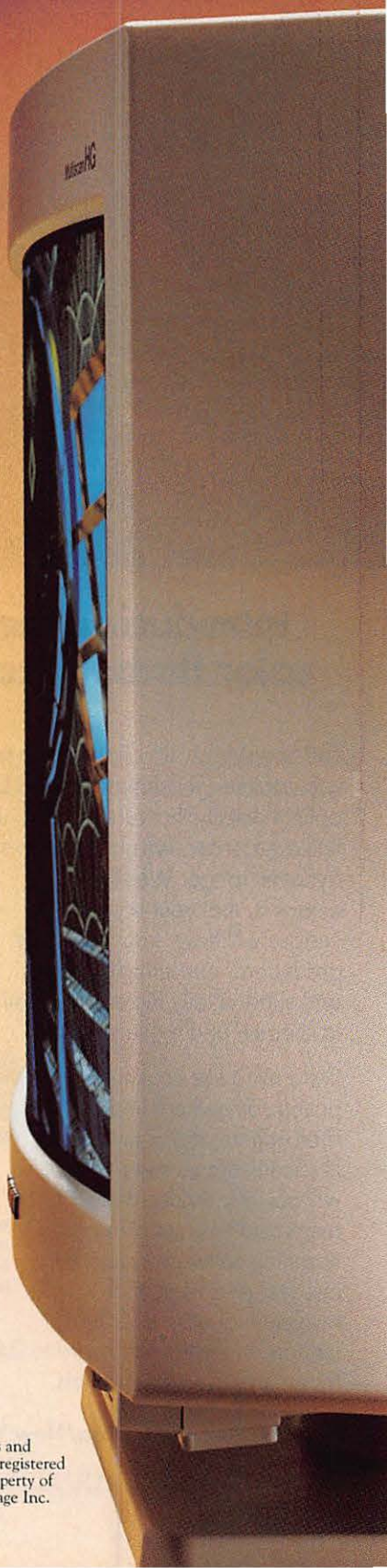
With a big 21-inch screen (20" viewable), the DiamondTron CRT is nine square inches larger than the largest desktop-size Sony® Trinitron.

The DiamondTron CRT also delivers superior performance. Its new hybrid design incorporates a vertically-flat, square-cornered screen with an aperture grille mask to minimize glare while increasing brightness. Plus Mitsubishi's proprietary NX-DBF™ (Dynamic Beam Forming) electron gun provides exceptional center-to-corner focus and brilliant edge-to-edge clarity. And the exclusive Diamond Control software (available August 1994) lets you set up the expanded array of monitor adjustment functions on-screen, including full-power management capabilities for auto-dimming or shut down.

Best of all, you can get all the benefits of advanced DiamondTron technology in our Diamond Pro 21T monitor for just $2,525 MSRP.

For more information about DiamondTron and the Diamond Pro 21T monitor, call us at 1-800-843-2515. In Canada call 1-800-387-9630. *For immediate product specifications, call Mitsubishi Qwikfax at 1-800-937-2094.*





©1994 Mitsubishi Electronics America, Inc. DiamondTron and NX-DBF are trademarks and Diamond Pro is a registered trademark of Mitsubishi Electronics America, Inc. Trinitron is a registered trademark of Sony Corporation. All other trademarks and registered trademarks are the property of their respective holders. *Circuithead* screen image produced by Jim Ludtke using ElectricImage Inc.

Circle 261 on reader service card

Editors' Choice

THE BEST PRODUCTS FEATURED IN MACWORLD

Edited by Susan Grant-Marsh

Macworld Editors' Choice is a complete listing of the hardware and software products selected as the best of their type in *Macworld's* comparative articles. A ❖ next to a product indicates that we chose more than one product in that category. A ◀ next to a product listing indicates that a native Power Mac version is available.

Hardware

MONITORS

BLACK-AND-WHITE MONITORS, May 93

Portrait monitor: 15-Inch Gray Scale Portrait Display; Mirror Technologies, 612/633-4450; $399, with video-display board $549.

Two-page monitor: ❖ L-View MultiMode; Sigma Designs, 510/770-0100; $1099, with video-display board $1398. ❖ MD 202 Two Page Display; Mobius Technologies, 510/654-0556; $699, with video-display board $798.

COLOR MONITORS, Oct 93

16- and 17-inch: ❖ ErgoView 17; Sigma Designs, 510/770-0100; $1349. ❖ MultiSync 5FG; NEC Technologies, 708/860-9500; $1355 (NEC's estimated dealer price).

SMALL COLOR MONITORS, Jan 94

14-inch display: ❖ Sony CPD 1430; Sony Corp. of America, 800/222-7669; $779.95. ❖ Nanao FlexScan F340i•W; Nanao USA, 800/800-5202; $799.

15-inch display: NEC MultiSync 4FGe; NEC Technologies, 708/860-9500; estimated street price $755.

NETWORK HARDWARE

HARDWARE ROUTERS, Jul 93

Under $1500: EtherRoute; Compatible Systems, 303/444-9532; base model $1495 (no TCP/IP support).

Between $1500 and $3500: InterRoute/5; Farallon Computing, 510/814-5000; $3299 to $3499.

HIGH-SPEED FAX MODEMS, Oct 93

Teleport Gold and Silver with Global Fax; Global Village Communication, 415/390-8200; Gold $499, Silver $429.

POWERBOOK TOOLS

DUO DOCKING CONNECTORS, Feb 93

PowerLink DeskNet; E-Machines, 503/646-6699; $699.

EXTERNAL HARD DRIVES, Feb 93

❖ Companion 120; APS Technologies, 800/874-1428; $599. ❖ PocketDrive 120MB; La Cie, 503/520-9000; $699.

INTERNAL FAX MODEMS, Feb 93

❖ PowerModem series; PSI, 408/559-8544; $195 to $495. ❖ PowerPort series; Global Village Communication, 415/390-8200; $229 to $499.

PRINTERS

DYE-SUBLIMATION PRINTERS, Jul 94

Prepress proofing—tabloid size/fastest: Phaser 480; Tektronix, 503/682-7377; $14,995.

Prepress proofing—tabloid size/most complete: Rainbow; 3M, 612/733-1110; estimated street price of $20,000.

Prepress proofing—letter size: ProofPositive Full Page; SuperMac Technology, 408/541-6100; $7999.

General publishing and business: Phaser IISDX; Tektronix, 503/682-7377; $9995.

PERSONAL PRINTERS, Sep 93

Ink-jet: StyleWriter II; Apple Computer, 408/996-1010; $359.

PostScript laser: TI microLaser Series; Texas Instruments, 512/250-6679; $1199 to $1599.

QuickDraw laser: LaserWriter Select 300; Apple Computer, 408/996-1010; $839.

WORKGROUP PRINTERS, Feb 94

High-speed: Hewlett-Packard 4Si MX; Hewlett-Packard, 800/752-0900; $5499.

Best buy: ❖ Apple LaserWriter Pro 630; Apple Computer, 408/996-1010; $2529. ❖ Hewlett-Packard LaserJet 4M; Hewlett-Packard, 800/752-0900; $2329.

SCANNERS

LOW-COST COLOR SCANNERS, Nov 93

$1300 to $1600: ❖ La Cie Silverscanner II; La Cie, 503/520-9000; $1599. ❖ Hewlett-Packard ScanJet IIc; Hewlett-Packard, 800/752-0900; $1599.

Under $1300: Mirror 800 Plus Color Scanner; Mirror Technologies, 612/633-4550; $1299.

OCR, Nov 93

OmniPage Professional; Caere Corp., 408/395-7000; $995.

SYSTEMS/STORAGE

DOUBLE-SPEED CD-ROM DRIVES, Jul 93

Sheer speed: Pioneer DRM-604X; Pioneer, 408/988-1702; $1795.

Overall value: AppleCD 300; Apple Computer, 408/996-1010; $599.

Budget choice: NEC MultiSpin 38; NEC Technologies, 708/860-9500; $465.

HIGH-SPEED HARD DRIVES, Aug 93

2.7GB drives: ❖ Nova XL 2700; Microtech International, 203/468-6223; $2999. ❖ Vista 3.5GB; Relax Technology, 510/471-6112; $3499.

SCSI-2 adapter: QuickSCSI; PLI, 800/288-8754; $499.

MACINTOSH UPGRADES, Jun 93

SE accelerator (25MHz): Quik30; Novy Systems, 904/427-2358; $449 (without FPU).

SE/30 accelerator (50MHz or 33MHz): Universal PowerCache; DayStar Digital, 404/967-2077; 50MHz $999 (with FPU), 33MHz $449 (without FPU).

LC and LC II upgrades: Macintosh LC III Logic Board Upgrade; Apple Computer, 408/996-1010; $599.

Mac II accelerators: ❖ Radius Rocket 25i, Radius Rocket 33; Radius, 408/434-1010; 25i $1199, 33 $2499. ❖ Universal PowerCache series; DayStar Digital, 404/967-2077; $449 to $999.

IIfx SCSI accelerator: QuickSCSI; PLI, 800/288-8754; $499.

Quadra static-RAM cache card: FastCache Quadra; DayStar Digital, 404/967-2077; $299 for Quadra 700 and 900, $449 for Quadra 800 and 950.

MIDRANGE HARD DRIVES, Mar 93

Low-capacity drive: La Cie Cirrus 240; La Cie, 503/520-9000; $769.

Notable technology: DiamondDrive 510; Mass Microsystems, 408/522-1200; $2089.

Bargain: APS Fujitsu 520; APS Technologies, 800/874-1428; $1149.

All-around quality: hammer 525FMF; FWB, 415/474-8055; $2799.

OPTICAL DRIVES, Dec 93

3½-inch: ❖ Epson OMD 5010; ClubMac, 800/258-2622; $959.

❖ 128 MO; APS Technologies, 800/874-1428; $899.

5¼-inch: ❖ Sharp JY-750; ClubMac, 800/258-2622; $1829.

❖ Infinity MaxOptical 11m; Peripheral Land Inc., 800/288-8754; $4113.

VIDEO/DISPLAY

24-BIT VIDEO CARDS, Apr 94

Inexpensive acceleration: PrecisionColorPro 24XP; Radius, 408/434-1010; $599.

continues

MACWORLD Editors' Choice

Full-featured acceleration: Thunder II GX•1360; SuperMac Technology, 408/541-6100; $4499.

HIGH-END VIDEO EDITING, June 94
Presentation Video: ❖ MoviePak2 Pro Suite; RasterOps, 801/785-5750; $4199. ❖ VideoVision Studio; Radius, 408/434-1010; $4499.
Corporate Video (Offline): Media Composer 400s; Avid Technology, 508/640-6789; $14,995.
Corporate Video (Online): VideoCube; ImMix, 916/272-9800; $40,500.

PHOTOSHOP ACCELERATORS, Apr 94
PhotoBooster; Radius, 408/434-1010; $999.

Software

ACCOUNTING/FINANCE

GROWING A SMALL BUSINESS, Nov 93
Small-business system: M.Y.O.B.; Teleware, 201/586-2200; $199.
Home office/personal finance: MacMoney; Survivor Software, 310/410-9527; $119.95.

BUSINESS TOOLS

STATISTICS, Oct 93
Exploratory data analysis: DataDesk 4.1; Data Description, 607/257-1000; $595.
Comprehensive package: SYSTAT 5.2.1; SYSTAT, 708/864-5670; $895.

CD-ROM

TOP 10 CD-ROMS, Mar 94
Overall: Seven Days in August; Time Warner Interactive Group, 818/955-9999; $79.99.

COMMUNICATIONS/NETWORKS

HIGH-SPEED FAX MODEM SOFTWARE, Oct 93
Faxstf; Telefocus, 816/886-9800; $79.

NETWARE CONNECTIVITY, Sep 93
NetWare for Macintosh; Novell, 801/429-7000; $495 for 5-user license to $2295 for 200-user license.

PROTOCOL ANALYZERS, Jul 94
EtherPeek, AG Group, 510/937-7900; $795.

SOFTWARE ROUTER, Jul 93
Apple Internet Router 3.0; Apple Computer, 408/996-1010; Basic Connectivity Package $499.

TERMINAL EMULATOR, Oct 93
VersaTerm; Synergy Software, 215/779-0522; $149.

GRAPHICS

2-D CAD, Jan 93
Low-end: BluePrint; Graphsoft, 410/461-9488; $295.
Midrange: PowerDraw; Engineered Software, 910/299-4843; $795.

3-D DESIGN, Aug 93
Price for performance: ❖ Ray Dream Designer 2.0.4; Ray Dream, 415/960-0765; $299. ❖ Alias Sketch 1.5; Alias Research, 416/362-9181; $995.
All-in-one solution: ❖ Infini-D 2.5; Specular International, 413/253-3100; $695. ❖ StrataVision 3D 2.6.1; Strata, 801/628-5218; $995.

CLIP ART'S GREATEST HITS, Jan 94
Overall collection: ❖ ClickArt Studio Series; T/Maker Company, 415/962-0195; $99.95 per volume. ❖ Electronic Clipper subscription service; Dynamic Graphics, 800/255-8800; $67.50 per month. ❖ Metro ImageBase Electronic Clip Art; Metro ImageBase, 800/525-1552; $74.95 per volume, CD-ROM $149.95. ❖ Images with Impact series; 3G Graphics, 800/456-0234; $99.95 to $129.95 per volume, CD-ROM $499. ❖ Typographers' Ornaments; Underground Grammarian, 609/589-6477; $25 per volume; ten TIFF albums $200; EPS volumes $50 each.

DRAW PROGRAMS (LOW-COST), Sep 93
Budget draw: Expert Draw; Expert Software, 305/567-9990; $49.95.
Budget draw/paint: UltraPaint; Deneba Software, 305/596-5644; $79.
Beginners' program: Aldus SuperPaint; Aldus Corp., 619/558-6000; $149.95.
Overall: Canvas; Deneba Software, 305/596-5644; $399.

FONT BUYERS' GUIDE, Mar 94
Text-face collection: Type On Call CD-ROM; Adobe Systems, 415/961-4400, 800/682-3623; $99 (includes the ability to unlock two families from preselected packages) plus $25 to unlock individual faces or $69 to $179 for unlocking families.
Display/decorative-face collection: Fontek; Letraset, 201/845-6100; $39.95 per face.
Bargain collection: Monotype ValuePack; Monotype, 312/855-1440; $89 for 57 fonts.

IMAGE DATABASES, Oct 93
❖ Aldus Fetch 1.0; Aldus Corp., 206/628-5739; $295. ❖ Multi-Ad Search 2.0; Multi-Ad Services, 309/692-1530; $249.

PAINT AND IMAGE-EDITING, Sep 93
Budget buy: Expert Color Paint; Expert Software, 305/567-9990; $49.95.
Overall program: Fractal Design Painter; Fractal Design Corp., 408/688-8800; $399.
Image-editing program: Adobe Photoshop 2.5.1; Adobe Systems, 415/961-4400; $895.

Vendors: Please write to Macworld Editors' Choice, 501 Second St., San Francisco, CA 94107, or send a fax to 415/442-0766 to inform us of changes in your phone number or your product's list price.

INTEGRATED SOFTWARE

INTEGRATED SOFTWARE, Feb 94
ClarisWorks; Claris Corporation, 408/727-8227; $299.

ORGANIZATION/PRODUCTIVITY

CALENDARS, Jul 93
Alarm system: ❖ First Things First; Visionary Software, 503/246-6200; $79.95.
❖ Smart Alarms Plus; JAM Software, 203/630-0055; $75.
All-around scheduler: Now Up-to-Date; Now Software, 503/274-2800; $99.
Meeting scheduler: Meeting Maker; On Technology, 617/374-1400; five-pack $495.

SALES-AUTOMATION SOFTWARE, Oct 93
❖ Contact Ease; WestWare, 619/274-5053; one user $395, five users $1495. ❖ CBS; Colleague Business Software, 512/345-9964; $495.

TEXT-RETRIEVAL SOFTWARE, Dec 93
Small system: On Location; On Technology, 617/374-1400; $129.
Multiuser system: Personal Librarian; Personal Library Software, 301/990-1155; $995.

PRESENTATION TOOLS

MULTIMEDIA AUTHORING, Mar 93
Entry-level: ❖ Action; Macromedia, 415/252-2000; $495. ❖ Passport Producer; Passport Designs, 415/726-0280; $495.

PRESENTATION SOFTWARE, Jul 94
Persuasion 3.0; Aldus Corp., 206/622-5500; $495.

UTILITIES

BRAVE NEW DOCUMENTS, Jan 94
Application-independent document distribution: Common Ground; No Hands Software, 800/598-3821; $189.95.
Book-length documents: FrameReader; Frame Technology, 800/843-7263; $84.95.

PRINTING, Sep 93
PC-printer cable packages: PowerPrint; GDT Softworks, 604/291-9121; $149.

VIRUS KILLERS, Jul 94
Commercial software: Virex; Datawatch, 919/549-0711; $99.95.
Free software: Disinfectant; free from online services.

VIRTUAL MEMORY SOFTWARE

VIRTUAL MEMORY, June 94
Virtual memory Software: Virtual 3.0; Connectix Corp., 415/571-5100; $99.
Memory Boosting Software: RAM Doubler 1.0.1; Connectix Corp., 415/571-5100; $99.

Put CompuServe to work for you.

Join CompuServe and connect yourself to more than a thousand services—and to a world of information, resources, and support ready to go to work for your business.

For more information about CompuServe, just mail this card, or call 1 800 848-8199.

Name _____ Company Name _____

Address _____

City, State _____ Zip _____

(_____) _____ (_____) _____

Day Phone Evening Phone

MacWorld/July


CompuServe



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 407 COLUMBUS, OHIO

POSTAGE WILL BE PAID BY ADDRESSEE

CompuServe®
NEW MEMBER DEPARTMENT Mac World/July
PO BOX 20961
COLUMBUS 0H 43220-9988





As far as you're concerned, CompuServe makes you lean. As far as your competition's concerned, it makes you mean.

There's one thing you learned when you started working with CompuServe. You don't have to be big for the competition to be nervous.

That's the power CompuServe puts in your hands when it links you to information and resources typically available only to big companies.

Stay in touch with your market, and the world, with E-mail, fax, and international telecommunications (for the price of a local phone call). Professional forums let you talk with the experts who have the answers. Control your own flight and hotel bookings. Get the news you need, straight off the wire. Reference libraries, all filled with archived articles from thousands of magazines, newspapers, and newsletters, mean more information on markets, clients, and competitors, in less time. And keep all your parts and programs running smoothly with CompuServe's hardware and software support.

Getting started is easy. A one-time membership fee and $8.95 a month let you use our basic services as often as you like. Plus, you get the first month free. Then keep going with hundreds of other services available at nominal additional charges. For more information or to order, see your computer dealer or call 1 800 848-8199. Outside the U.S. and Canada, call 1 614 529-1349.

CompuServe®

The information service you won't outgrow.™

Special offer for Newton Developers. Call 800 621-1258 and ask for the Newton Representative.

Circle 66 on reader service card

CREATIVE FORCES ARE DRAWN TO THE VIEWSONIC 17



Your mind's eye visualizes the finished work and you are drawn to the screen of the **new** ViewSonic 17. This is where perfection is found. The image on the screen is vital to you — not all monitors are created equal. That's why we developed the New Generation ViewSonic 17 color monitor. There is a difference!

The revolutionary super dark screen of the ViewSonic 17 is designed to increase contrast and produce pure, sharp colors. In addition to a vivid, luminescent image, our digitally controlled 17" monitor offers ViewMatch,™ a color control system designed to accurately match the screen to printer output. To customize settings, such as screen size or pincushioning, there is OnView,™ an easy-to-use array of on-screen adjustments. And the monitor supports non-interlaced resolutions up to 1,600 x 1,200 pixels.

The ViewSonic 17 is even equipped with BNC connectors, which allows two systems to be attached to the monitor at the same time. As a matter of fact, the entire line of ViewSonic's 15- through 21-inch New Generation monitors is MAC and PC compatible, and meet Swedish MPR-II standards for low radiation.

Unleash your creative forces with the new ViewSonic 17 ... and See The Difference!

20480 Business Parkway Walnut, CA 91789
Tel: (800) 888-8583 or (909) 869-7976 Fax: (909) 869-7958

17" CRTs yield 15.5" to 15.7" diagonal viewable screens.
All products and brand names are registered trademarks of their respective companies.



ViewSonic®
See The Difference!™

Circle 237 on reader service card

Star Ratings

OVER 300 HARDWARE AND SOFTWARE REVIEWS AT A GLANCE

Edited by Wendy Sharp

Macworld Star Ratings lets you compare hardware and software products for the Macintosh by providing summaries of *Macworld*'s authoritative product reviews from the past year. The number of stars at the beginning of each capsule review indicates quality; our reviewers assign five stars to outstanding products and one star to poor ones. The ◀ symbol indicates that a product is available in a native Power Mac version, although unless stated otherwise the version we reviewed was the 680X0 version.

If a product has been upgraded since our last review, the most recent version number supplied by the vendor appears in parentheses after the reviewed version number. To read a full review of any product in the listing, please consult the issue listed at the end of each synopsis.

Vendors: Please write to *Macworld Star Ratings*, 501 Second St., San Francisco, CA 94107 to inform us of changes in the version number or list price of your product, or of changes to your phone number.

Software

BUSINESS TOOLS

★★★ **4D First 1.0, ACI US, 408/252-4444, $295.** This entry-level relational database is a low-cost way to distribute the power of 4D and 4D Server to an office full of Macs. It's not much easier to use, however, than the full-fledged 4D. **May 94**

★★★ **4D Server 1.0.1 (1.0.5), ACI US, 408/252-4444, $1495 to $3495.** Database server uses the ingenious multitasking technology built into 4D to make it appear that each client has the full resources of the server. If you use 4D on a network, you need this product. **Jun 93**

★★★ **Acrobat Exchange, Acrobat Distiller, Adobe Systems, 415/961-4400, $195 to $2495.** Complete, well-planned paperless office system creates application-independent viewable files that can be readily distributed on a network. Still, it's not yet as inexpensive or as convenient as you might wish. **Oct 93**

★★★ **@Risk 1.1, Palisade Corp., 607/277-8000, $395.** Statistical simulator for Microsoft Excel financial computations generates complex, statistically valid templates within Excel and is the first choice for analysts who work with probabilistic models every day. It assumes that the user is an Excel power user. **Aug 93**

★★ **BaseMap 1.0.1, GeoPoint, 415/957-1560, $149.** For simple maps displaying simple data, this mapmaking tool may be useful. It's not for the cartographic sophisticate, however, as it offers very limited data-display abilities and only one projection. **May 94**

★★★★ **ClarisImpact 1.0, Claris Corp., 408/727-8227, $399.** Business graphing, project management, orbject-oriented drawing, word processing, and presentation functions merge in this business graphics software. The outstanding integration offers versatility that dedicated programs are pressed to match. **Jun 94** ◀

★★★★ **ClarisWorks 2.0, Claris Corp., 408/727-8227, $299.** Integrated program provides more features, is easier to use and faster, and has better integration among modules than other available programs. **Aug 93** ◀

★★★★ **Common Ground 1.0, No Hands Software, 415/802-5800, $189.95.** Simple, robust document-interchange system is the clear choice for modest document-distribution jobs. In tests, it worked easily with documents from many different applications. **Oct 93**

★★★ **Cricket Graph III 1.5, Computer Associates International, 516/342-6000, $129.** Basic and foolproof charting program produces cleaner charts than Excel with little effort, although its feature set is fairly modest. **Apr 94**

★★★★ **DeltaGraph Pro 3, DeltaPoint, 408/648-4000, $195.** At its new lower price, this charting program is the best feature-for-feature value in Macintosh charting. There's even a new Chart Advisor function that suggests the appropriate display for your data. **Apr 94** ◀

★★ **EasyFlow 1.1, HavenTree Software, 613/544-6035, $229.** The rough edges and distinctly un-Mac-like attributes of this flowcharting software reflect its DOS heritage, but on the whole it's easy to use. **Sep 93**

★★★ **Helix Express 1.0 (2.0), Helix Technologies, 708/465-0242, $439.** This relational database has an iconic programming language that sometimes baffles programmers, but provides an easy route into basic data-handling for nonprogrammers. **Jul 93**

★★★ **Helix Tracker 1.0, Helix Technologies, 708/465-0242, $439.** Well-designed workgroup-document manager has strong audit and annotation features; imposes just the right amount of administrative discipline. For large documents, however, Ethernet will look mighty attractive. **Nov 93**

★★ **Lotus Notes 3.0, Lotus Development Corp., 617/577-8500, $495 per client.** Well-organized, robust, and flexible business data system demands a full-time administrator, preferably with considerable programming experience, for effective use. **Sep 93**

★★★ **Map II 1.5, ThinkSpace, 519/661-4006, $395.** Well-structured program has most of the functions a simple geographical information system needs and is suitable for introductory instruction in GIS and for alert first-time users who just like maps. **May 94**

★★★★ **MarcoPolo 2.0, Mainstay, 805/484-9400, $395.** Inexpensive, easy-to-use product allows you or your workgroup to archive and retrieve documents, whether in electronic or paper form. Queries are easy to construct and searches are handled quickly. **Sep 93**

★★★ **Market Master Manager 3.5, Breakthrough Productions, 916/265-0911, $395 to $1995.** Sales-automation software is designed to keep track of contacts, generate mailings, and make sure that leads don't fall through the cracks. It includes a remote module, but it has some odd user-interface features. **Oct 93**

★★ **Memorizer 2.0, Brains Software Engineering, 432-231-28973 (Austria), $100.** Software records dictation, and you transcribe the dictation in a word processor. You may prefer to stick with a hand-held tape recorder, considering the product's RAM and storage appetite and its propensity to crash. **Aug 93**

★★★ **Micro Planner Manager 1.1, Micro Planning International, 303/757-2216, $695.** When you require cross-project resource sharing and leveling for a reasonable price, this project-management software has the edge. It has a generally intuitive interface, though there's a steep learning curve for its advanced features. **Nov 93**

★★★★ **Microsoft FoxPro for Macintosh 2.5, Microsoft Corp., 206/882-8080, $495.** Dazzlingly fast and easy to use relational database has a greatly improved interface and cross-platform compatibility. For projects of 4 to 20 users that handle large amounts of data (hundreds of thousands to millions of records) it offers excellent performance. **Apr 94**

★★★ **Office Tracker 1.1, Milum Corp., 512/327-2255, $195 to $995.** The efficient user interface of this software sign-out board, in both single-user and networkable versions, makes it easy to learn and use; but it has some minor flaws. **Dec 93**

★★★★ **Project Scheduler 5, Scitor Corp., 415/570-7700, $695.** For most midrange project-planning, this program's many hits outweigh its few misses. It goes beyond the requisite scheduling options, with inflation factors and unlimited projects in memory, and it conforms to accepted standards, so you get consistent, predictable results. **Aug 93**

★★ **Useful Voice Processor for Macintosh 1.1v7 (1.1v9), Useful Software Corp., 508/774-8233, $179.95.** Dictation software lets you record and transcribe on a Mac. It has some useful features, but you must take uncommon care to avoid crashes. **Dec 93**

★★★ **Wingz 1.1ae, Informix Software, 913/599-7100, $399.** Low-overhead spreadsheet offers advanced-math functionality, a competent calculating engine and superior charts; but is missing outlining, real 3-D spreadsheet linking, and the host of third-party add-ons offered for Microsoft Excel. **Jul 93**

★★★ **WordPerfect Works 1.2, WordPerfect Corp., 801/225-5000, $249.** This program offers seven well-integrated and flexible modules. It has a few shortcomings, including some memory-management prob-

continues

Star Ratings

lems, but buyers should generally be pleased. **Jun 93**

COMMUNICATIONS/NETWORKS

★★ **AccessPC 3.0, Insignia Solutions, 415/694-7600, $129.95.** Utility translates most word-processor and some database formats, but it doesn't translate graphics and some of its translations result in data loss. **Apr 94**

★★★ **Crosstalk for Macintosh 2.0, Digital Communications Associates, 404/442-4000, $195.** Commendable communications product has a feature set that well matches its competition. Still, the script editing is complex and you must manually enter phone numbers each time you use it. **Apr 94**

★★★ **Delrina FaxPro for Macintosh 1.0, Delrina Corp., 408/363-2345, $129.** Fast, efficient fax software has an excellent address-book feature but also has some interface quirks and minor bugs. **Feb 94**

★★★★ **DOS Mounter Plus 4.0, Dayna Communications, 801/269-7200, $100.** File-transfer and translation utility works with floppies, removable drives, and network volumes and supports wild cards in DOS extensions. **Apr 94**

★★★★ **EtherPeek 2.0.3, LocalPeek 2.0.3, TokenPeek 1.0 (2.0.3), AG Group, 510/937-7900, $495 to $995.** Priced at a fraction of the cost of dedicated hardware analyzers, these network analyzer tools give you better analysis with a friendlier interface. They're a worthwhile investment. **Jan 94**

★★★★ **MacLink Plus/Translators Pro 7.5, DataViz, 203/268-0030, $149.** If your PC files are in archaic formats, you'll need this file-transfer and translation utility. It's a great option for most users, but it doesn't support removable drives or network volumes. **Apr 94**

★★★ **On The Air 1.0.1 (1.0.2), Digital Eclipse Software, 510/547-6101, $79.99 to $639.99.** Intercom system transmits System 7 SND resources, SoundEdit, and AIFF sound files across a network. It's well designed and performs decently, but its usefulness seems limited. **Aug 93**

★★★ **On The Road 1.1, Connectix, 415/571-5100, $99.** Helpful PowerBook utility looks at what's hooked up to your computer and adjusts accordingly—for example, printing when a printer is available and otherwise deferring printing. It only supports some hardware, however, so check before buying. **Dec 93**

★★★★ **Silver Cloud 1.2, AG Group, 510/937-7900, $495.** If you are administrating a large network and are drowning in a sea of devices and zones, this network-management software will make your life simpler. **Feb 94**

★★★ **SITcomm 1.0, Aladdin Systems, 408/761-6200, $120.** Inexpensive telecommunications software is fairly easy to set up and use, and will do well for people who use just one or two online services. Still, it lacks true scripting and has limited protocol options. **Apr 94**

★★★ **Snap Mail 1.01, Casady & Greene, 408/484-9228, $200 to $1440.** Software will put you on the electronic-mail trail more easily and more cheaply than any competing product, if you can live with some minor (but surprising) shortcomings. **Jun 94**

★★ **SoftPC 3.1, Insignia Solutions, 415/694-7600, $499.** While the speed of this Windows PC emulator is greatly improved, buying an add-in PC card for your Mac is more efficient. **Mar 94**

★★★★ **Timbuktu Pro, Farallon Computing, 510/814-5000, $199 to $1999.** Terminal emulation product is a must-have for in-house technical-support staff and for people who need direct connection to computer systems on a variety of networks. The major enhancements of this version are TCP/IP support for Macs and noticeably faster screen redraw. **May 94**

★★ **TrafficWatch II 2.0, Neon Software, 510/283-9771, $495.** The price of this AppleTalk traffic monitor is closer to that of full-blown network analyzers that do much more, albeit with greater complexity. Without printing, alarms, triggers, or true multiprotocol support, this product misses the mark. **Jun 94**

★★★★ **VersaTerm 5.0, Synergy Software, 215/779-0522, $195.** The price and feature set of this network terminal-emulation package make it a terrific value, in spite of its complex documentation and limitations. If you're looking for a fast path to Internet connectivity, this is it. **Jan 94**

DESKTOP PUBLISHING

★ **AboutFace 1.1.1 (1.1.2), Big Rock Software, 716/288-2860, $69.95.** Type-specimen generator has many serious deficiencies that need to be addressed. **Jan 94**

★★★★ **Aldus Fetch 1.0, Aldus Corp., 206/622-5500, $295.** The rich feature set and network support of this image-cataloging software make it a clear winner. Although cataloging is slow, users have fine control of the depth and compression of thumbnails. **Aug 93**

★★★★ **Aldus PageMaker 5.0, Aldus Corp., 206/622-5500, $895.** Desktop publishing software has added the features, both great and small, that it's been lacking, while still retaining the ease-of-use advantages that it's always had. This is a superb upgrade. **Nov 93**

★★★ **Cumulus 1.1 (1.2), Canto Software, 415/431-6871, $295 to $895.** Good network support, plus a feature that creates a protocol file for recording user actions, make this image-cataloging program a good choice for workgroups. It doesn't have an image-preview feature, nor does it offer 32-bit thumbnails. **Aug 93**

★★★ **Expanded Book Toolkit 1.0.1 (2.1), The Voyager Company, 310/451-1383, $295.** Using this hypermedia publishing program, average mortals can create highly functional multimedia books in a fraction of the time it would take to do the job unassisted. Be aware, though, that it's no QuarkXPress. **Jun 93**

★★★★ **FontMonger 1.5.7, Ares Software Corp., 415/578-9090, $149.95.** Font-conversion utility provides cross-platform, cross-font conversion and makes it easy to create composite, subscript, superscript, and rotated characters. **Sep 93**

★★ **FotoTune 1.1, Agfa Division of Miles, 508/658-5600, $795.** Color-management software has a capable engine, but it's not the complete color management system Agfa touts. Invisible tech support and poor documentation were only part of the problem. **Apr 94**

★★★★ **FrameMaker 4.0, Frame Technology Corp., 408/433-3311, $895.** For such projects as long, structured documents—books, instruction manuals, and textbooks—this desktop publishing program is one of the best tools available. It's fast, well mannered, and a real time-saver. **Mar 94**

★★ **ImageAccess 1.0, Nikon, 516/547-4355, $495.** This expensive image-cataloging program has an unusual interface and cannot be used over a network. A plug-in module provides direct support for Nikon's LS-3510AF film scanner. **Aug 93**

★★★ **Kodak ColorSense 1.0, Eastman Kodak, 716/253-0740, $499.** Color-management system gives average users access to a reasonable level of color consistency at a reasonable price. It does not make color separations. **Oct 93**

★★ **Kudo Image Browser 1.0 (1.1), Imspace Systems Corp., 619/272-2600, $195.** This image-cataloging software cannot control thumbnail depth or compression and doesn't have a keyword feature or allow multiple users to access the catalog simultaneously. The unique Riffle feature lets you quickly scan images. **Aug 93**

★★★★ **Print Shop Deluxe, Brøderbund Software, 415/382-4400, $50.** Even the most ham-fingered can create professional-looking greeting cards, signs, banners, letterhead stationery and calendars with these desktop publishing templates and graphics. While it's not a substitute for a high-end program, it is easy to use and inexpensive. **Apr 94**

★★★★ **QuarkXPress 3.2, Quark, 303/894-8888, $895.** This upgrade adds the EfiColor XTension to ensure the greatest possible fidelity of color images and is a must-have for professional color publishers who use Quark. For others, the enhancements are welcome but minor enough that they provide little incentive to upgrade. **Nov 93**

★★★★ **Tableworks Plus 1.05, Npath, 206/392-7745, $299.** Publishing utility adds a full table-editor to QuarkXPress and is a must-have for anyone doing even mildly complex tables. **Jan 94**

EDUCATION

★★★★ **Decimal & Fraction Maze 1.2 (1.2.3), Great Wave Software, 408/438-1990, $69.95 to $89.95.** Education software weaves the threads of eight math curricula—from third grade to eighth, along with two levels of adult education—into an interesting and visually stimulating game. **Jul 93**

★★★★ **How Computers Work, Time Warner Interactive Group, 818/955-9999, $79.99.** Graceful, well-integrated CD-ROM tutorial guides the curious through brief but helpful explanations of basic computer technologies. **Jan 94**

★★★ **HyperStudio, Roger Wagner Publishing, 619/442-0522, $179.95.** Hypermedia authoring tool supports color and many multimedia functions through easy-to-use dialog boxes, but the interface doesn't always follow Apple guidelines. **Dec 93**

★★★ **MacGrade 1.5.5, CalEd Software, 800/795-0641, $85 to $245.** Grade-book program has a straightforward, simple interface and clear documentation. Although there's room for improvement, it's easy to use and flexible. **Feb 94**

★★★ **Millie's Math House 1.0 (1.1), Edmark Corp., 206/556-8400, $49.95.** Math-education software provides ways for preschoolers to experiment with numbers and counting. It's engaging, but more advanced levels would keep children challenged longer. **Jul 93**

★★★★ **The Rosetta Stone, Fairfield Language Technologies, 703/432-6166, $395.** Foreign-language instruction on CD-ROM is a valuable educational tool and fun to use. The lessons are well paced, and the content is generally excellent and diverse. **Jan 94**

ENTERTAINMENT

★★★ **BlackJack Trainer, ConJelCo, 412/492-9210, $75.** Learn the strategies you need to win at blackjack with this program. There are a number of trivial bugs, but they won't get in the way. **Oct 93**

★★★★ **Crystal Crazy, Casady & Greene, 408/484-9228, $49.95.** Ultraglossy, superpolished version of the classic Crystal Quest is challenging and fun without being overly difficult. Each level retains some old elements, and adds some new ones to keep you on your toes. **Jun 94**

★★★ **Daily Sports Quiz 1.0, DreamTime, 619/236-1341, $49.95.** If you think you know a lot about sports and love to play trivia games, then this entertaining and informative game is for you. **Oct 93**

★★★★ **Falcon MC 1.0, Spectrum HoloByte, 510/522-1164, $69.95.** Whether you're an armchair jet jockey or an experienced fighter pilot, you're bound to be impressed by the 4-bit color, enhanced graphics, and sophistication of this latest incarnation of the original Macintosh combat flight simulator. **Dec 93**

★★★ **Firefall Arcade, Inline Software, 203/435-4995, $49.95.** If you loved the classic video game Centipede, or are just looking for a fun shoot-'em-up, this arcade-style game will satisfy. **Jun 94**

★★★ **Hell Cab 1.0.1, Time Warner Interactive Group, 818/955-9999, $99.99.** Take a diabolical New York cabbie with a penchant for time travel, toss in the Empire State Building, add a few brainteasers, and you've got this engaging game on CD-ROM. It's slow and the arcade sections are hard to control, but overall it succeeds. **Jan 94**

★★★ **Indiana Jones and the Fate of Atlantis, LucasArts Games, 415/721-3394, $59.95.** In this game, the whip-wielding archaeologist goes looking for Atlantis and finds it armed to the gills with magical technology and Nazi stooges. If you're not bothered by the story's astonishing sexism, you'll find it diverting. **Oct 93**

★★★ **The Journeyman Project 1.0 (1.2), Presto Studios, 619/689-4895, $79.95.** Interactive science-fiction epic on CD-ROM is a work of art. The scenes are rich with painstakingly detailed graphics, elaborate models, and subtle textures, but the sluggish pace may leave you impatient and bored. **Sep 93**

★★★★ **Myst 1.0, Brøderbund Software, 415/382-4400, $59.95.** The smooth pacing of actions and sounds in this beautiful CD-ROM game give it a dreamlike quality. This is a game that's been polished until it shines. **Mar 94**

★★★★ **Seven Days in August, Time Warner Interactive Group, 818/955-9999, $59.99.** Compelling, interactive documentary on CD-ROM cuts a slice from history and offers August 10 through August 16, 1961, (the building of the Berlin Wall) to viewers in a way that truly evokes the period. **Oct 93**

★★★★ **SimCity 2000, Maxis Software, 510/254-9700, $69.95.** In essence, your goal with this marvelous city-simulation software is to build a city and run it successfully. The game is fascinatingly complex, but it's simple to use, and the elaborate graphics are so lovely that it's even fun just to watch. **Jun 94**

★★★★ **Spectre Supreme, Velocity Development, 415/274-8840, $69.95 to $89.95.** The pleasure of this game comes not in high scores, but in the almost addictive sense of control you get from moving your tank around the screen. It's so much fun that it's even fun when you lose. **Dec 93**

★★★★ **Spin Doctor, Callisto Corp., 508/655-0707, $59.95.** In the tradition of the best Macintosh games, this game tests your wits and reflexes alike. It's part strategy game, part kinetic sculpture. **Jun 94**

★★★ **V for Victory: Utah Beach, Three-Sixty Pacific, 408/879-9144, ext. 23, $69.95.** The post-D-Day conquest of Normandy is re-created in this game; its strength is the way it blends easy play with complicated strategy. Some bugs exist. **Oct 93**

FINANCE/ACCOUNTING

★★★★ **Andrew Tobias' TaxCut 1993, MECA Software, 203/255-1441, $79.95.** The free-form approach and flexible Help menus of this tax-preparation software make filling out your tax return a smooth, almost relaxing process. The only state versions available are California and New York. **Apr 94**

★★★★ **BestBooks 1.0, Teleware, 201/586-2200, $99.** In a straightforward, unintimidating manner, this small-business accounting program integrates the standard bookkeeping functions of accounts receivable, accounts payable, and general ledger. **Jul 93**

★★★ **ExpensePlus 1.0.1, State of the Art, 714/753-1222, $139.95 to $159.95.** Software uses a Newton MessagePad to record expenses, then sends the data to a Mac to create and print expense reports. While it's a real time-saver, you'll need AppleScript expertise to modify the expense reports. **Apr 94**

★★★★ **MacInTax 1993, ChipSoft, 602/295-3110, $69.95.** Tax-preparation software provides a reasonably detailed manual and a reliable, structured interface for building your tax return. Its inability to accept figures containing amounts in cents or round off to whole dollar amounts will frustrate some users. **Apr 94**

★★★ **MacInTax Tax Planner, ChipSoft, 602/295-3110, $19.95.** Software allows you to construct a five-year forecast of your tax liability, projecting tax figures through 1997 in a concise summary format. If you have a tax preparation program, you can do the same thing by creating alternative tax returns. **Apr 94**

★★★ **MacInTax Tax Savings Guide, ChipSoft, 602/295-3110, $19.95.** Simple, straightforward collection of well-written, fully indexed tax tips and suggestions is designed to help you better understand your tax return and reduce your tax liability. Although strong in content, it doesn't allow you to copy and paste, export as a text file, or even print. **Apr 94**

★★★ **Managing Your Money 6.0, Meca Software, 800/820-7457, $79.95.** Personal-finance program does a good if somewhat roundabout job of keeping track of your total financial picture. Although it isn't as easy to use as the competition, it excels in tax, investment, and financial planning. **Jun 94**

★★★★ **Quicken 4, Intuit, 415/858-6095, $69.95.** Personal-finance software is powerful and easy to learn, even for a financial neophyte. Although slower than previous versions, 4.0 lives up to its promise of making financial chores easier and better organized. **Nov 93**

GRAPHICS

★★★ **addDepth 1.0.2, Ray Dream, 415/960-0768, $179.** The purpose of this graphics program is to enhance the creation of 2-D images with 3-D effects. It's versatile, accommodating, and affordable, but working on complex images gets tedious because of the automatic application of styles. **Aug 93**

★★★★ **Adobe Illustrator 5.0, Adobe Systems, 415/961-4400, $595.** The Mac's most dependable draw program has added enough new features to boggle the mind. It still can't import TIFF images, but it catches up with, and in some areas surpasses, the competition. **Nov 93**

★★★★ **Adobe Photoshop 2.5 (2.51), Adobe Systems, 415/961-4400, $895.** No graphics program is as universally loved as this one, but while this upgrade builds on the program's capabilities, it ignores some minor weaknesses that have begun to peek through the product's armor. It's still great but perhaps not perfect. **Jun 93**

★★★★ **Aldus FreeHand 4.0, Aldus Corp., 206/622-5500, $595.** The new page-design and text-editing functions of this powerful draw program make it more than worth the price of admission. Aside from some bewildering interface elements, it's an outstanding program. **Mar 94**

★★★★ **Alias Sketch 1.5, Alias Research, 416/362-9181, $995.** The enhanced modeling and revamped rendering capabilities of this 3-D illustration program contribute to a tremendous and reliable upgrade, a heartening example of a company listening to its users. **Jul 93**

★★★★ **Blueprint 4, Graphsoft, 410/290-5114, $295.** Entry-level 2-D drafting program is a wonderful antidote to the complicated CAD system blues. Don't be misled by the low price; this full-fledged drafting package is powerful enough to serve professionals who appreciate the value of simplicity. **Jul 93**

★★ **BrushStrokes 1.0, Claris Clear Choice, 408/727-8227, $139.** If you have absolutely no experience with computer graphics, the simplified interface of this 24-bit paint program might warrant its price. Otherwise, you can find better programs for less. **Oct 93**

★★★ **CA-Cricket Draw III 2.0 (2.01), Computer Associates International, 516/342-5224, $249.** This draw program is not going to inspire experienced Mac artists to jump up and down, but its features are abundant, the interface is straightforward, and the price is right. **Oct 93**

★★★ **Canvas 3.5, Deneba Software, 305/596-5644, $399.** Draw program offers two to three times as many features as any competing program, but our reviewer would prefer an interface that you can navigate without scrambling for the manual. **Jan 94**

★★ **ColorUp 1.0, Pantone, 201/935-5500, $99.95.** Professional graphic designers don't need the advice of this color tutorial and series of palettes. Although nonprofessionals might benefit from the information on color theory, it may not be worth the money. **Nov 93**

★★★★ **DeBabelizer 1.5 (1.5.5), Equilibrium Technologies, 415/332-4343, $299.** Bitmapped-graphics-conversion software supports a huge number of file formats and can work wonders. If you spend any significant time dealing with file conversion, you should have this program. **Nov 93**

★★★ **DesignWorkshop 1.0 (1.1), Artifice, 503/345-7421, $895.** The accessible interface and versatile modeling environment of this 3-D modeling software may be worth the fairly high price, particularly for architectural-design conceptualization. **May 94**

★ **Easy Color Paint 3.0, MECC, 612/569-1500, $59.95.** For a program that purports simplicity, this color paint program is anything but. Possibly the weakest, least intuitive paint program for the Mac, it's unnecessarily complex and frustrating. **Jul 93**

★★★ **Expert Draw 1.0, Expert Software, 305/567-9990, $49.95.** Inexpensive draw program is not really for experts, but it offers a decent, no-frills set of basic drawing tools and commands for beginning illustrators, office use, or anyone on a budget. **Aug 93**

★★★★ **Folio 1 Media Kit-Print Pro, D'Pix, 614/299-7192, $499.95.** Each image in this texture collection on three CD-ROMs provides a dynamic range of colors, highlights, and shadows; is free of artifacts; and is crisply focused. **Aug 93**

★★★★ **Fractal Design Painter 2.0, Fractal Design Corp., 408/688-8800, $399.** If you can put up with a few inconveniences, this color paint software provides the tools required by professional artists, and many of its functions—natural-media brush tools, the color-sensitive magic wand—are entirely without peer. **Jul 93**

★★★ **Generic CADD 2.0, Autodesk, 206/487-**

continues

Star Ratings

2233, $495. Competent, midlevel 2-D drafting program has a well-executed Mac interface, a good complement of tools, and a sprinkling of high-end features, such as floating-point precision. **Aug 93**

★★★ **Infini-D 2.5.1, Specular International, 413/253-3100, $695.** Serviceable 3-D graphics program has a wide range of modeling, rendering, and animation options, with a straightforward interface and quick operating speed. **Feb 94**

★★★★★ **Kai's Power Tools 2.0a, HSC Software, 310/392-8441, $199.** Phenomenally powerful suite of Photoshop plug-ins have an addictive quality typically associated with arcade games. There's no end to the automated effects you can generate, the ways you can apply them, and the artwork you can create. **May 94**

★★★★ **MacroModel, Macromedia, 415/252-2000, $1495.** This 3-D modeling software is a solid resource to have along when you venture out into 3-D space. The interface is elegantly simple, making the Mac's inner space a more pleasant place to work. **May 94**

★★★ **Ofoto 2.0 (2.02), Light Source Computer Images, 415/461-8000, $395.** Many new features—notably color support—have been added to the already impressive toolbox of this scanning software. It often produces good results, but it rarely produces the best scan possible for a given image and output method. **Jul 93**

★★★★ **Paint Alchemy 1.0, Xaos Tools, 415/487-7000, $99.** For the price, these plug-in graphics effects are a tremendous value that both casual users and professional artists can use to design a little chaos into their work. **May 94**

★★★★ **PosterWorks 3.0, S. H. Pierce & Co., 617/338-2222, $395.** This large-format graphics production tool is for people who think big, up to 10,000 square feet big. It fills the need for user-defined, full-color, large-format output robustly and elegantly. **Aug 93**

★★★★ **PowerDraw 4.0 (5.0), Engineered Software, 910/299-4843, $795.** The best new feature of this polished 2-D drafting program is an open architecture that supports modules that let you customize the program with application-specific tools, floating palettes, and menu commands. **Sep 93**

★★★★ **Showplace 2.0, Pixar, 510/236-4000, $495 to 695.** Adequate, entry-level, 3-D modeler is suitable for illustration and other graphic arts applications. This version offers improved access to MacRenderMan, one of the best renderers around, plus plug-in modeling tools. **Apr 94**

★★★ **StrataVision 3d 2.6.3, Strata, 801/628-5218, $995.** 3-D program includes animation, and is a superior rendering tool and versatile modeler. It's a challenge to learn, however, as the interface is overly dense and sometimes sluggish. **Feb 94**

★★★★ **StudioPro 1.0, Strata, 801/628-5218, $1495.** If you need a well-balanced, all-in-one 3-D modeling, rendering, and animation solution, this application is an excellent choice. **Mar 94**

★★★ **Transverter Pro 1.0 (1.51), TechPool, 216/291-1922, $395.** Remarkable graphics-conversion software can read PostScript files and convert them to a variety of formats. As you might expect of a program attempting to fill such a tall order, its conversions are not always flawless, but it can be a lifesaver nonetheless. **Nov 93**

★★★ **Typestry 2.0, Pixar, 510/236-4000, $299.** An approachable interface, animation support, and outstanding Renderman rendering technology make this 3-D type-renderer a popular choice. This version improves on the original, but still lacks canned positioning effects. **Jun 94**

★★★ **upFront 2.0, Alias Research, 416/362-9181, $299.** Capable modeler is something of an acquired taste. However, take the time to learn it and you'll find useful, if unconventional and demanding, tools that are well suited for architectural modeling. **Jan 94**

★★★ **Virtus WalkThrough 1.1, Virtus Corp., 919/467-9700, $195.** Interactive 3-D modeling tool provides instantaneous access to rendered 3-D scenes, allowing you to travel through models at will. While it has some problems (such as occasionally just quitting), it's an excellent value. **Jul 93**

★★★ **Wraptures One, Wraptures Two, Form and Function, 619/536-9999, $95 each.** The images in these texture collections on CD-ROM are generally acceptable, although some are muddy and others are difficult to decipher at low resolutions. If you need images for repeating patterns, however, these repeat seamlessly and are a good value. **Aug 93**

MATH/SCIENCE

★★★ **Alchemy III, Tripos Associates, 314/647-1099, $950.** Molecular-modeling software can model decapeptides and DNA fragments, in addition to the expected small molecules, with refreshing alacrity on a Mac IIci or better. **Sep 93**

★★★ **Amazing Universe 2.1 (2.1a), Hopkins Technology, 612/931-9376, $79.95.** Space-image exploration package on CD-ROM offers an amazing variety of astronomical images with a very competent program (ProVision II) for modifying and inspecting those images. It assumes that users won't be fazed by such things as writing their own image-convolution matrices. **Aug 93**

★★★★ **Caduceus Science Review Macintosh Project 1.0, Scientia, 617/776-3427, $150 to $250.** If you're taking the MCAT, you'd be nuts not to buy this interactive science review. With proper use, its 9MB of files are certain to improve your score. **Apr 94**

★★★★ **CircuitMaker 3.0, MicroCode Engineering, 801/226-4470, $199.95.** Much of the tedium of diagramming circuits and constructing prototypes is relieved by this digital circuit simulator that provides a powerful set of basic tools for a very reasonable price. **Aug 93**

★★★★ **CSC ChemOffice 2.0, Cambridge Scientific Computing, 617/491-6862, $995 to $1595.** Comprehensive chemistry software is the Mac equivalent of software that seven years ago would have cost $200,000 and required an equally costly minicomputer. It's a winner. **Feb 94**

★★★ **FASTAT 2.0, SYSTAT, 708/864-5670, $199.** Statistical business-analysis software makes sense as a day-to-day statistics tool. It provides the right tests for most requirements, and its graph types provide plenty of information, although they lack glamour. **Jun 93**

★★★ **f(z) 6, Lascaux Graphics, 602/299-0661, $115.** The main problem this math software attacks is four-dimensional visualization. It costs slightly more than a textbook, making it a great educational bargain. **Sep 93**

★★★ **InStat 2.01, GraphPad Software, 619/457-3909, $95.** For scientists with limited statistics backgrounds, the chatty clarity of this lab-oriented statistics software's help screens will be invaluable, while the limited variables and minimal graphics won't be a problem. **Nov 93**

★★★ **MathCAD 3.1, MathSoft, 617/577-1017, $495.** Numerical and symbolic computation software is easy to learn and use, and is much more powerful than earlier versions. It doesn't compete in scope with the largest math programs, but for most science and engineering tasks, it's a fast way to get problems solved. **Jun 93**

★★★★ **Mathematica 2.2, Wolfram Research, 217/398-0700, $595.** The one essential program in science and mathematics adds a function browser that makes the program as easy to use as it should be, as well as improvements to computational routines. **Sep 93**

★★★ **QC Tools 1.0, Abacus Concepts, 510/540-1949, $245.** Quality-control tool kit for StatView appears to introduce a slight slowdown in program response, but is generally well designed, well documented, and suitable for quality-control neophytes as well as professionals. **Jan 94**

★★★★ **Resampling Stats 1.0, Resampling Stats, Inc., 703/522-2713, $225.** Innovative statistics software has proved itself to be a superior teaching tool in numerous classroom tests. If you have any interest in statistics, you should give this admirably straightforward approach careful consideration. **Jun 94**

★★★★ **SerePlot 2.12, Scientfic Visions, 301/593-0317, $135.** If you have piles of data and don't need animated, exploding bar-charts in 24-bit color, this scriptable plotting software should be part of your analysis tool kit. **Jun 94**

★★★★ **Spyglass Dicer 2.0, Spyglass, 217/355-6000, $695.** Scientific 3-D visualization tool displays a two-dimensional slice through a three-dimensional object (which is represented in the computer by a data table). While Dicer pushes the limits of the Mac hardware, for its function this product is really the only game in town. **Jul 93**

★★★ **Spyglass Transform 3.0 (3.01), Spyglass, 217/355-6000, $595.** Scientific-visualization software can access data stored in every common format, offers some useful presentation-graphics features, and includes a programming language with a large range of built-in, high-level scientific functions. **Sep 93**

★★★★ **StatView 4.01 (4.02), Abacus Concepts, 510/540-1949, $595.** If your work uses statistics for decision support rather than abstract analysis, and you regularly have to present your results to nonstatisticians, this is the statistics package for you. **Oct 93**

★★★ **Sum Total 1.01, Concurrent Engineering Tools, 602/464-8208, $99.95.** Exceptional calculator utility is packed with advanced features, including a mode that lets you sample colors and use the numerical color values in calculations. The convenient palette approach causes a distinct time-lag in menu operations. **Oct 93**

★★★★ **Turing's World 3.0, CSLI Publications, 312/568-1550, $19.95.** Computer-science educational software lets you investigate some fundamentals in computing at an almost unbelievable bargain price. **Feb 94**

★★★★ **Visualization of Natural Phenomena, Telos/Springer Verlag, 408/249-9314, $59.95.** CD-ROM introduction to applying all aspects of computer graphics to scientific imaging covers all disciplines and offers definitive analysis of methods. No other source covers this much material, at this level of clarity. **Jan 94**

★★★★★ **Voyager II 1.0 (1.01), Carina Software, 510/352-7328, $159.95.** If a brilliantly lit, star-filled sky holds more than a moment's fascination for you, you need to know about this astronomy program. In a firmament of mostly faint and forgettable astronomy software, it's a supernova. **Jul 93**

ORGANIZATION/PRODUCTIVITY

★★★ **Achieving Your Career 1.02 (1.04), Up Software, 415/921-4691, $69.** HyperCard-based job-search software succeeds by compactly organizing. It provides a structure for identifying letters to write, phone calls to make, and interviews to follow up. **Aug 93**

★★★★ **Arrange 1.1, Common Knowledge,**

415/325-9900, $349. This personal information database's flexible, intuitive approach to data-handling makes it an excellent tool for storing all kinds of day-to-day information. **May 94**

★★★★ **CalendarMaker 4.0, CE Software, 515/224-1995, $59.95.** Polished, intuitive calendar-making program is straightforward, with a variety of options for customizing your calendar. Some features can be cumbersome. **Oct 93**

★★ **ClienTrac 1.7.1 (1.7.2), Whiskey Hill Software, 415/851-8702, $135.** Easy-to-use, HyperCard-based contact-management software performs as billed, but fails to inspire much enthusiasm. **Aug 93**

★★★ **Contact Ease 2.0.1 (2.0.2), WestWare, 619/274-5053, $395 to $1495.** Contact-management and sales-automation software helps salespeople keep in touch with contacts, makes it easy to generate letters, and maintains detailed records of activities. It has a few quirks but is overall a good program. **Aug 93**

★★★★ **DateBook and TouchBase Pro Bundle, Aldus Corp. Consumer Division, 619/558-6000, $149.95.** Calendar and contact manager offer a superior combination of integration, usefulness, and features. If you want to get organized, make sure you look at this dynamic duo. **Feb 94**

★★★★ **In Control 2.0, Attain Corp., 617/776-1110, $89.95.** The best features of an outlining program are combined with those of a database, making it easy to sort, search, organize, and print your to-do list. **Aug 93**

★★★ **Now Contact 1.0 (1.0.1), Now Software, 503/274-2899, $99.** This contact manager has some innovative features and could easily become the top address-book program for the Mac by adding some features, such as file reconciliation. **Mar 94**

★★★ **Power Team 1.0, ProVue Development Corp., 714/892-8199, $149.95.** Personal information manager consists of seven modules: Phone Book, Calendar, Correspondence, Checkbook, Calculator, Expense Report, and Mailing List. It has some bugs, but the data entry features are excellent. **Oct 93**

★★ **Rae Assist 1.0.2, Rae Technology, 408/725-2850, $199.** Although this personal-information manager offers some fresh ideas, including automatic linking of company and contact information, it's too big and too slow. **Jan 94**

PRESENTATION TOOLS

★★★★ **Adobe Premiere 3.0, Adobe Systems, 415/961-4400, $695.** Solid and dependable QuickTime video-editing software offers a structured, responsive, and flexible interface with enhancements that range from the mundane to the dramatic. It can now mix 99 tracks. **Jan 94**

★★★★ **Astound 1.0, Gold Disk, 408/982-0200, $399.** Presentation software lets you include sound, text, and graphics animation with no more effort than pasting in a chart in other products. It's a good value. **Nov 93**

★★★★ **Authorware Professional 2.0.1, Macromedia, 415/252-2000, $4995.** Multimedia-scripting and -presentation software lets you develop complex presentations with amazing speed. Although expensive, it's wonderfully done and will pay for itself in time saved. **Feb 94**

★★★ **Avid VideoShop 2.0, Avid Technology, 508/640-6789, $499.** QuickTime video-editing program shines in its intuitive, easy-to-use interface, although it may fall short on features for hard-core video professionals. **Feb 94**

★★★★ **CoSA After Effects 1.1, CoSA, 401/831-2672, $1295.** QuickTime movie editor blurs the boundaries between animation and traditional video-editing. It produces results that simply can't be created in other packages. **Oct 93**

★★★ **Deck II 2.1, OSC, 415/252-0460, $399.** AV Macs turn into digital-audio workstations with this software that enables you to record, mix, modify, and play back CD-quality sound. It doesn't include equalization features. **Jun 94**

★★ **Elastic Reality 1.0, ASDG, 608/273-6585, $349.** Exciting morphing tool can create professional-caliber results—if you can figure out how to use it. The needlessly convoluted interface, poor documentation, and inadequate tech support make that a difficult task. **Feb 94**

★★★★ **FlipBook 1.0, S.H. Pierce, 617/338-2222, $89.** Animation printing utility lets users make flip-books (consisting of a series of printed images that, through application of an extremely technical thumb-and-forefinger method, appear to move) out of QuickTime movies, PICS animations, and Scrapbook files. **Jun 94**

★★★ **Hi Rez Audio Volume 1.0, Presto Studios, 619/689-4895, $149.95.** The enjoyable, high-quality music on this CD-ROM adds a nice touch to presentations. The software for browsing the music is quirky, and the product could use some documentation. **Jul 93**

★★★★ **Morph 2.0, Gryphon Software, 619/454-6836, $239.** Easy to use morphing software is beautifully designed, with delightful new features, including the ability to morph QuickTime movies. Using it is as painless as morphing gets. **Apr 94**

★★★ **Passport Producer Pro 1.0, Passport Designs, 415/726-0280, $995.** Superb, albeit quite expensive, media-integration package makes assembling even complex presentations surprisingly easy. Path animation is limited to entrances and exits. **Apr 94**

★★★ **QuickFlix 1.0, VideoFusion, 419/891-1090, $149.** Approachable QuickTime moviemaking software lacks the high-end features of other programs but costs a whole lot less. **Feb 94**

★★★ **VideoFusion 1.0.1 (1.5), VideoFusion, 419/891-1090, $649.** Collection of special effects for QuickTime movies may not be for the casual user, but if you have the equipment and you can't live without spinning logos, then go ahead and indulge. **Jul 93**

★★★★ **Working Model 1.0, Knowledge Revolution, 415/553-8153, $995.** Animators and engineers will love this terrific motion simulator that mimics real motion by applying physical laws to objects. It's easy to learn and use, but you'll need some understanding of math and physics. **Oct 93**

PROGRAMMING

★★★ **CLImate 1.0, Orchard Software, 617/876-4608, $59.95.** With a little more documentation and a few more sample programs, this utility that provides a subset of Unix-like commands for the Mac environment could be an irresistable package. **Oct 93**

★★★★ **FutureBASIC 1.0 (1.02), Zedcor, 602/881-8101, $299.95.** Complete, easy-to-learn, real-world programming tool has full Toolbox, System 7, and assembler support. It's a wonderful tool that's rapidly becoming a favorite among commercial developers. **Jul 93**

★★★ **Macintosh Common Lisp 2.0 (2.0.1), APDA, 716/871-6555, $495.** Anyone who likes programming in LISP will be pleased with the environment provided by this version of the standard dialect and its extensive debugging and interface-building facilities. **Oct 93**

★★★ **Object Logo Student Edition, Paradigm Software, 617/576-7675, $49.95.** This book-plus-disk package offers a wide-ranging introduction to programming concepts. It's aimed roughly at the high-school educational level and lets you see something happen for every few lines of code you type. **Jul 93**

★★★★ **Object Master for Think C and C++, ACI US, 408/252-4444, $255.** Object-oriented development environment is full of goodies and will pay for itself in about a week due to increased programmer productivity. **Apr 94**

★★★★ **PG:Pro 1.5 (2.1), Staz Software, 601/255-7085, $169.** For part-time or novice programmers, the combination of these BASIC programming tools and FutureBASIC is a fast path to a working program. **Jul 93**

★★★ **PowerPacks 2.0, NDG Phoenix, 301/718-8880, $225.** Programmers' tool kit for 4th Dimension provides 280 external procedures to improve custom applications and exploit System 7 features. Don't expect any quick fixes for 4D's less-than-blistering performance in most areas, though. **Oct 93**

★★★★ **Smalltalk/V for Macintosh 2.0, Digitalk, 714/513-3000, $495.** Object-oriented development system is now even more viable for commercial projects, while Digitalk's customer support and documentation set a standard other vendors should emulate. **Feb 94**

★★★ **SoftPolish 1.1, Language Systems Corp., 703/478-0181, $295.** Program-quality-assurance utility systematically checks the resources in a program's interface against a huge laundry list of errors. It's a programming tool for anyone who hopes to produce a commercial Mac application. **Sep 93**

★★★ **SourceSafe 2.1, One Tree Software, 919/821-2300, $295 to $1195.** Solid, relatively easy-to-use product handles program-development administrative tasks, including version control, for multiplatform programs being created by groups. **Sep 93**

★★★★ **Symantec C++ for Macintosh 6.0, Symantec Corp., 408/253-9600, $499.** If you like Think C, you'll like this software-development system, too. For the Mac, it's an excellent opportunity to catch a new wave in programming. **Nov 93**

★★★ **VIP BASIC 1.0.1, Mainstay, 805/484-9400, $295.** Popular programming language lets programmers who know only BASIC get started producing real, if interpreted, Mac programs. It's a serious developer's tool, though it's not on the same footing as VIP-C. **Jun 94**

★★★★ **VIP-C 1.0.1, Mainstay, 805/484-9400, $495.** If you've mastered the rudiments of C, this programming-code generator will let you code about ten times faster than you could using only an editor. Its real strength is in rapidly assembling smaller projects. **May 94**

UTILITIES

★★★ **7th Heaven 2.5 (2.5.1), Logical Solutions, 612/659-2495, $99.95.** Our reviewer found the seven enhancements to System 7 fun and elegantly done, but not all of them were useful. **Jul 93**

★★★ **Alki Seek 2.1, Alki Software Corp., 206/286-2600, $39.95.** Competent file-finding utility scans by file name or content and lets you combine multiple search criteria. It cannot search in the background or find text in compressed files. **Jul 93**

★★★ **AppleSearch 1.0, Apple Computer, 408/996-1010, $1799.** Although it has some rough edges, this product for archiving and retrieving text is highly useful. It presents retrieved information clearly and extracts

continues

Star Ratings

text from documents in many formats. May 94

★★★ **Atticus Vista 1.0, Atticus Software Corp., 203/348-6100, $69.95.** Control panel and application automatically catalog the disks you mount on the desktop. It has a few problems, including limited search options, but it can help bring order to disorganized disk collections. May 94

★★★ **Billy Steinberg's PBTools 1.0.1, Inline Software, 203/435-4995, $99.55.** If you want basic PowerBook management without added frills or complex menu bar displays, this collection of four utilities may be just your cup of tea. Jul 93

★★★★ **CD-ROM ToolKit 1.0.5, FWB, 415/474-8055, $79.** Software accelerator can halve the time it takes to open files and search on a CD-ROM. The product supports a wide variety of formats and CD-ROM drives, but users should be aware that playback of QuickTime movies is often uneven. May 94

★★★ **Chameleon 2.0.3 (2.1), Logical Solutions, 612/659-2495, $59.95.** Sleek desktop-pattern editor comes with an ample supply of rich, textured color images and a set of limited but functional editing tools. Sep 93

★★★★ **ClickChange 2.0, Dubl-Click Software, 818/888-2068, $89.95.** Interface-customizing package has nothing you need but is filled with everything you want, including tools that let you alter major elements of the Mac's look and feel. Aug 93

★★★ **Connectix Desktop Utilities 1.0 (1.0.1), Connectix Corp., 415/571-5100, $99.** Although some of the 16 utilities offered in this package are more at home on a PowerBook, this collection offers one-stop shopping at a low price. It's worth it for the file-synchronization, Keyboard Power, and Hot Keys features alone. Nov 93

★★★★ **CopyDoubler 2.0 (2.0.1), Symantec/Fifth Generation Systems, 504/291-7221, $59.** This utility speeds up copying, lets you queue jobs for background copying, and offers a variety of other useful, copying-oriented features—all at a very reasonable price. Nov 93

★★★ **Copyright Pro 1.0.3, CSG Technologies, 412/471-7170, $79.** Utility takes over the Finder's copying function, copies in the background, and allows you to regularly schedule copying. It doesn't speed up copying, however. Nov 93

★★★★ **CPU 2.0 (2.0.1), Connectix Corp., 415/571-5100, $99.** Reasonably priced collection of utilities for the PowerBook adds new features, including file synchronization, that easily justify the upgrade price. Sep 93

★★★ **CryptoMactic 1.0.1, Kent Marsh, 713/522-5625, $99.** Security software offers fast Finder-level encryption and decryption with effective file removal. Although its simplest encryption algorithm isn't quite hacker-proof, it's worth considering. Feb 94

★★★★ **DiskLock PB 1.0, Symantec/Fifth Generation Systems, 504/291-7221, $59.** PowerBook security software balances robust security with simplicity and ease of use. It's much harder to crack than most PowerBook utility collections' security features, and will keep out all but the most determined. Jan 94

★★★ **The Disney Collection Screen Saver, Berkeley Systems, 510/540-5535, $49.95.** Mickey, Goofy, Peter Pan, Ariel, and other Disney favorites cavort around your screen with this screen saver that includes 16 different modules. Mar 94

★★★ **DriveShare 1.03, Casa Blanca Works, 415/461-2227, $129.95.** This utility allows users to share a removable drive over a network. It's most useful if your network consists of both System 6 and System 7 users, as its advantages over System 7 file sharing are slight. Nov 93

★ **DriveTech 1.0, MicroMat Computer Systems, 415/898-6227, $59.95.** Without decent documentation or clearer error messages, this floppy-drive cleaning and diagnostic program is essentially a $60 floppy-drive cleaning kit. Since you can buy a cleaning kit without software for $10, that makes it a bad deal. Jan 94

★★★ **DupLocator 1.03, Midnight Software, 303/933-1013, $99.** For new Macintosh users who don't have a general file utility, this software that locates duplicate files, as well as performs basic file commands such as moving and renaming files, may be useful. Jan 94

★★ **DynoPage 2.0, Portfolio Software, 802/865-2700, $59.95.** While this utility simplifies the printing of booklets and double-sided pages, it doesn't support PostScript graphics, is incompatible with some popular applications, and has a buggy drag-and-drop feature. Jul 93

★ **eDisk 1.0 (1.2), Alysis Software Corp., 415/566-2263, $149.95.** Driver-level compression software has little to recommend it over file-level, idle-time compression programs. The biggest drawback is the strong potential for disk or file corruption. Oct 93

★★★ **Freedom of Press Classic, ColorAge, 508/667-8585, $149.** Utility allows you to print PostScript graphics on almost any non-PostScript printer—easily and with impressive results. Mar 94

★★★ **Icon 7, Inline Software, 203/435-4995, $79.95.** Simple, straightforward utility has a streamlined and intuitive library feature for storing and retrieving icons, plus tools for icon editing. Its icon collection, however, is pretty paltry. Sep 93

★★★ **Icon-It Pro 3.0.6, Olduvai Corp., 305/670-1112, $129.** Utility allows you to attach custom tool bars to almost any application, including the Finder. The interface is quirky, but you get used to it. Dec 93

★★★ **I Like Icon 1.0, Baseline Publishing, 901/682-9676, $59.95.** Glitzy utility has tools for icon editing, has a nice library of icons, and can create animated icons. Some basic features, such as a text tool, are missing, and the animated icons are fun but impractical. Sep 93

★★★ **MacPak 1.0, Symantec/Fifth Generation Systems, 504/291-7221, $149.** The quality of this utility collection is uneven—some modules are unpolished—but if you don't already own AutoDoubler, CopyDoubler, and a good file-management program, it's worth the price. Jan 94

★★★★ **MacTools 3.0, Central Point Software, 503/690-8090, $149.** Recovering trashed files is a snap with this utility package that fixes more disk problems than its competition. It includes disk-and-file maintenance, disk repair, virus protection, and backup. Mar 94

★★ **Magic Typist 2.0, Olduvai Corp., 305/670-1112, $129.** If you want to speed up typing of repetitive phrases or if you don't have full use of your hands, this utility, which automates typing of repetitive phrases, may be useful, but some functions work erratically or not at all in Microsoft Word. Sep 93

★★★★ **Mr. File 2.0, Softways, 408/978-9167, $99.** The well-designed background capabilities of this Finder utility make it a handy tool for copying, finding, moving, launching, and renaming files, although it has a few interface quirks. Dec 93

★★★ **Now Compress 1.0 (1.0.1), Now Software, 503/274-2899, $69.** Compression utility holds its own in a crowded market; it's easy to use, it's complete, and it compresses as well as or better than other options. Dec 93

★★★ **Now Fun, Now Software, 503/274-2899, $45.** Five control panels let you liven up your Mac by customizing everything from menu colors to system sounds. The included screen-saver modules and desktop patterns and pictures are fairly limited, though. Dec 93

★★★★ **Now Utilities 4.0.1 (4.0.2), Now Software, 503/274-2899, $129.** Many thoughtful improvements have been added to this collection of utilities, which is now better integrated, more logically designed, and still an excellent deal for your dollar. The new scrapbook feature, however, is awkward and inconvenient. Aug 93

★★★ **Open Sesame 1.02, Charles River Analytics, 617/491-3474, $99.** Utility automates Finder operations, such as opening and closing files, without resorting to macros or scripts. It has an elegant interface, but people with strict work habits are more likely to find its suggestions worthwhile than are those who don't follow a routine. May 94

★★★ **OptiMem 1.4.1, Jump Development Group, 412/681-2692, $129.** Systemwide memory manager monitors RAM use and allocates RAM where it's needed. Works best with software that handles minimum-memory situations effectively. Mar 94

★★★ **Power To Go 2.0, Claris Corp., 408/727-8227, $99.** PowerBook utility collection has a few unique slants—including a floating palette that can display battery-life estimates—that keep it above the also-rans. It does lack features of similar products. Dec 93

★★★★ **QuicKeys 3.0, CE Software, 515/221-1801, $169.** The simple, unintimidating interface of this macro-building utility allows you to build a set of useful shortcuts quickly. Mar 94

★★★★ **RAM Doubler 1.0.1, Connectix Corp., 415/571-5100, $99.** Inexpensive system extension doubles available RAM for many Macintosh users. There are a number of requirements, however, including System 7, 4MB of physical RAM, and a 68030 board. May 94

★★★ **Redux Deluxe 2.0.2 (2.5), Inline Software, 203/435-4995, $79.95.** Easy to learn and relatively simple to use, this backup program has some powerful features, such as scripting, but it doesn't have a compression option. Jan 94

★★★★ **Retrospect 2.0, Dantz Development Corp., 510/253-3000, $249.** Powerful backup and archiving software has an improved interface and scripting capabilities, and works well for all levels of users. Sep 93

★★★★ **Retrospect Remote 2.0, Dantz Development Corp., 510/253-3000, $449.** Utility allows fast, automatic backup of networked Macs to a central Mac with a backup device. It worked flawlessly in our reviewer's tests. Sep 93

★★ **SafeDeposit 1.2, Dayna Communications, 801/269-7200, $189.** Automated backup program is easy to set up but slow. Also, unattended backups must be restarted from scratch if disk space runs short and a new disk isn't inserted. Sep 93

★★ **Safe or Sorry 1.0, Olduvai Corp., 305/670-1112, $59.** Unobtrusive control panel periodically saves all of your keystrokes, but requires System 7.1 and offers no clear-cut advantages when compared with other text-recovery programs. Oct 93

★★★★ **SAM 3.5.8, Symantec Corp., 408/253-9600, $99.** Efficient, thorough virus-protection software slows down system start-up and application launching, but this program is a worthwhile investment for anyone who exchanges or downloads files. Mar 94

★★★★ **Screenscapes 1.0.1, Kiwi Software, 805/685-4031, $44.95.** With more than 600 desktop patterns—and a suite of well-designed modules to transform those patterns—this fun and frivolous utility lifts desktop-pattern design to new heights of elegance. Nov 93

continues

SAVE $23.40

For Mexican and Canadian subscriptions, add $18 for shipping. Add $70 for all other foreign countries.

Subscribe today and...

SAVE $23.40!

YES! Send me a one-year (12 issues) subscription of Macworld for $24. I'll save $23.40 off the annual newsstand price. Please bill me later.

name_____

company_____

address_____

city/state/zip_____

Macworld

4CCM9

SAVE $23.40!

NO POSTAGE
NECESSARY IF
MAILED IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 1167 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

Macworld

SUBSCRIPTION DEPARTMENT
P.O. BOX 51666
BOULDER, CO 80321-1666

SAVE $23.40!

Star Ratings

★★★ **Square One 1.5.2, Binary Software, 310/582-8293, $74.** Flexible, attractive icon-based file launcher provides infinitely customizable palettes, including one that displays active applications. The application will consume 400K of your system memory. Aug 93

★★ **Stacker for the Macintosh 1.0.1, Stac, the Data Compression Company, 619/431-7474, $149.** As long as you pay attention to the capacity of your hard drive, this driver-level compression product performs reasonably well, except for its slow hard drive read quotient. Oct 93

★★★★ **Star Wars Visual Clips, Sound Source Unlimited, 805/494-9996, $89.95.** Control panel lets you play QuickTime movie clips from *Star Wars* at system events. If you have the money, the hard drive space, and the RAM, this is the kind of totally cool toy that will make you remember why you love your Mac. Sep 93

★★★ **Tempo II Plus 3.0.9, Affinity Microsystems, 303/442-4840, $179.95.** Very capable macro-creating utility may be daunting for novices but offers plenty of power for advanced users. Mar 94

★★★★ **TimesTwo 2.0, Golden Triangle Computers, 619/587-0110, $149.** This driver-level compression utility is transparent and robust. It caused no problems through a two-month course of testing, on a system with myriad utilities and system software tools. Mar 94

★★★★ **Toner Tuner 1.0.3, Working Software, 408/423-5696, $24.95.** Inexpensive, incredibly useful extension adds a sliding bar to print dialog boxes allowing you to adjust the amount of toner applied to each print job. If you can't save trees, you can at least save toner. Dec 93

★★★★ **ultraShield 1.252 (1.3), usrEZ Software, 714/756-5140, $149.** Sophisticated security product combines practically every feature you might need into an integrated package, including a lightning-fast version of the U.S. government data-encryption standard. Dec 93

★★★ **UnderWare 1.0.1, Bit Jugglers, 415/968-3908, $59.95.** Inspired, silly fun for your Mac's desktop comes from a control panel that adds three features: a screen saver, desktop patterns, and animations that run on your desktop while you work. The price for this whimsy is mostly in disk space. Jun 94

★★★★ **Virex 5.0, Datawatch Corp., 919/549-0711, $99.95.** The extremely fast, trouble-free performance of this software makes the task of guarding against computer viruses almost painless. Its speed puts it ahead of the pack. May 94

★★★ **Virtual 3.0.1, Connectix Corp., 415/571-5100, $99.** If you need to eke out as much virtual memory speed as possible, this utility may be a useful tool. For System 6 users who want virtual memory, it's the only game in town. Sep 93

★★★ **Working Watermarker 1.02, Working Software, 408/423-5696, $49.95.** Simple, useful system extension allows you to print or fax text and/or graphics "watermarks" in the background of virtually any document. Although it has imperfections, it's earned a permanent spot in our reviewer's System Folder. Jan 94

VERTICAL MARKETS

★★★★ **Claire, The Personal Music Coach 1.0.1, Opcode Systems, 415/856-3333, $129.95.** Musicianship program teaches pitch and interval recognition, sight singing, and intonation. Although the interface is nonstandard, it's logical and easy to learn. May 94

★★★★ **Finale 3.0.1, Coda Music Technology, 800/843-2066, $749.** Upgraded music-notation software is now infinitely more pleasant to use. Its comprehensive feature set makes it the standard against which all other music-notation products must be judged. Dec 93

★★ **MacInteriors, Microspot, 408/253-2000, $129.** Correctly placing objects is unduly cumbersome in this interior-design software, but once you catch on to the program's quirks, it's useful. Feb 94

★★★★ **Musicshop 1.0, Opcode Systems, 415/856-3333, $149.95.** MIDI sequencer is an excellent choice as a first sequencer. It's powerful enough to satisfy the needs of most MIDI users. Oct 93

★★★ **Roll Call 2.0 (2.5.6 or 3.0), By the Numbers, 603/927-4508, $495 to $595.** 4th Dimension database application for church management helps track donations, attendance, church-group membership, and visitation. While not a complete church-management system, it's an acceptable complement to a general accounting program. Aug 93

★★★ **Sailing Master 1.1, Starboard Software, 313/662-4393, $64.99.** Though the slow speed and jerky motion point to less-than-polished programming, this sailboat-racing simulation offers good tactical play and is fun—well worth the price for sailing competitors. Nov 93

★★★★ **WillMaker 5.0, Nolo Press, 510/549-1976, $69.95.** Legal software quickly and easily automates the creation of wills, health-care directives and proxies, and final-arrangements documents. It offers excellent supporting explanations, examples, and background. Jun 94

WRITING TOOLS

★★★★ **MacWrite Pro 1.5, Claris Corp., 408/727-8227, $249.** The clean, uncluttered interface of this low- to middle-level word processor is still one of its major assets. This upgrade adds support for QuickTime, PowerTalk, AppleScript, and more. May 94

★★ **MasterWord 5.1, Alki Software Corp., 206/286-2600, $99.95.** The centerpiece of this package of add-on Microsoft Word commands is a set of customizable tool bars. Unfortunately, rough edges remain, including inaccuracies in the documentation and some features that don't work as advertised. Aug 93

★ **The Oxford English Dictionary, Oxford University Press, Electronic Publishing, 212/679-7300 ext.7370, $895.** CD-ROM dictionary contains 20 print volumes, including half a million words, but the flaws, omissions, unreliability and unforgivably poor design are unbearable. Apr 94

★★★ **Random House Unabridged Dictionary, Random House Electronic Publishing, 212/572-2600, $179.** The most comprehensive American-made dictionary on CD-ROM works within any program and is good at guessing misspelled words. Although some functions don't work reliably, the quality and design of the software are better than those of other dictionaries on CD-ROM. May 94

★★★ **Spelling Coach Professional 4.0.1, Deneba Software, 305/596-5644, $195.** If you're considering investing in reference software, this spelling checker, dictionary, and thesaurus is a relatively capable, if expensive, alternative. Oct 93

★★★★ **Thunder 7 1.5.3, Baseline Publishing, 901/682-9676, $99.95.** Stand-alone spelling checker and thesaurus interactively monitors your keystrokes and alerts you to potential errors as they are entered. It quickly and transparently prevents you from making embarrassing typos. Nov 93

★★★★ **WordPerfect for Macintosh 3.0, WordPerfect Corp., 801/225-5000, $495.** The innovative interface of this word processor uses context-sensitive button bars and expandable rulers to make innumerable features accessible with a click of the mouse. It's an accomplishment in ease of use. Mar 94

★★★★ **WriteNow 4.0.1, WordStar International, 415/382-8000, $119.95.** Tidy word processor's conservative use of memory (the application fits into a dainty 600K partition) and graceful interface will continue to win it enthusiastic fans. This version adds elegant table capabilities and several PowerBook-friendly features. Jun 94

★★★ **A Zillion Kajillion Rhymes 1.0, Eccentric Software, 206/628-2687, $49.95.** Rhyming dictionary is quick, small, simple, and self-contained; but it only rhymes with the roots of search words (and ignores *-ed, -s,* and *-ing* endings). Nov 93

Hardware

MISCELLANEOUS HARDWARE

★★ **ACS100, Altec Lansing Consumer Products, 717/296-2818, $180.** Lightweight powered speakers don't sound as good as they should. There's too much emphasis on the high end at the expense of the midrange, and they hiss noticeably. Dec 93

★★ **ACS150, Altec Lansing Consumer Products, 717/296-2818, $150.** Subwoofer rounds out the sharp tones of the ACS100, but the bass response is neither punchy enough nor loud enough, and the unit is about the size and weight of a concrete block. Dec 93

★★ **Address Express, CoStar Corp., 203/661-9700, $499.** Flaky performance and system crashes plagued this envelope-and-label printer in our tests, but the print quality was good. Oct 93

★★ **Apple Adjustable Keyboard, Apple Computer, 408/996-1010, $219.** Keyboard is only a slight improvement on the flat slab keyboard. Theoretically, it corrects ulnar deviation, but many sufferers of repetitive stress injuries want a keyboard that adjusts vertically. Jul 93

★★★★ **Apple Color OneScanner, Apple Computer, 408/996-1010, $1349.** Tests of this color scanner demonstrate unpolluted colors and sharp image details, perhaps due to color filters and lenses that Apple claims were designed and tuned for the scanner. Jul 93

★★★ **AppleDesign Powered Speakers, Apple Computer, 408/996-1010, $179.** Tall and curvy powered speaker set looks and sounds good and can produce uncomfortably high volumes without noticeable distortion, but the bare-wire-and-terminal connections aren't user-friendly. Dec 93

★★★ **Apple Newton MessagePad, Apple Computer, 408/996-1010, $699.** Although Apple released this personal digital assistant too early and marketing hype led to mistaken expectations, this is a very intelligent piece of work with an impressive variety of serious business uses. Dec 93

★★★ **Apple PowerCD, Apple Computer, 408/996-1010, $400.** This extremely versatile and beautifully designed portable CD-ROM drive offers impressive audio and Photo CD features, but if you're a serious CD-ROM user, it's too slow to satisfy. Jan 94

★★★★ **ArtZ ADB Tablet, Wacom Technology Corp., 206/750-8882, $449.** Combining pressure-sensitive operation, manageable size, and a new pencil-thin stylus, this affordable digitizing tablet is perfect for artists looking for traditional-style control of their graphics

continues

Star Ratings

programs. Aug 93

★★★ **Computer Crayon, Appoint, 510/463-3003, $49.** The kid contingent's verdict was a definite thumbs-up on this brightly colored input device that's shaped like a thick pencil. The buttons can be hard for smaller children to press, and serious computer artists should still opt for a drawing tablet. Oct 93

★★★★ **Coolscan LS-10e, Nikon Electronic Imaging, 516/547-4200, $2600.** Compact desktop scanner for digitizing images from 35mm transparencies is slow, but delivers images good enough for newsprint publications and some catalogs. Dec 93

★★★★ **Cypress PhonePro 1.2, Cypress Research Corp., 408/752-2700, $349 to $950.** By improving its integration with FaxPro and with PowerTalk and PowerShare, this powerful telephony software has greatly extended its business scope. May 94

★★★ **DrawingSlate, CalComp Digitizer Division, 714/821-2000, $395.** Digitizing tablet is a good, compact, low-cost implementation of pressure sensitivity, although the battery-operated stylus is a bit heavy. Jun 94

★★★ **EMBARC, Embarc Communications Services, 407/364-2000, $395 plus fees.** If you're a PowerBook user who is frequently in places with no telephone and you need timely delivery of electronic news and E-mail, this portable wireless message service may prove useful, but the cost may be prohibitive to others. Sep 93

★★★★ **Epson ES-800C, Epson America, 310/782-0770, $1499; Macintosh interface kit $399.** Flexible 400-dpi scanner offers a range of options, including one- or three-pass scanning, plus a full-featured, easy-to-use software package. Aug 93

★★ **Gulliver, Appoint, 510/463-3003, $119.** This diminutive mouse is hard to hold comfortably for an extended period, but it works well on almost any surface and is an acceptable option for PowerBook users. Oct 93

★★ **G-Vox, Lyrrus, 215/922-0880, $399.** Hardware-software guitar-instruction package lets your Mac "hear" the notes you play on your guitar. Although the hardware works well, the software has some basic problems and doesn't live up to the hardware. Apr 94

★★★ **Hello Music, Yamaha Corp. of America, 714/522-9240, $449.** MIDI starter kit includes an impressive tone generator that's compatible with General MIDI Level 1 and Roland MT-32, but the included software is functional at best. Dec 93

★★★ **LightningScan Portable, Thunderware, 510/254-6581, $459.** PowerBook owners will find this hand scanner's modem- or serial-port connection, lightweight interface, and total portability well worth the cost, although the scanner is incompatible with some desktop Macs. Dec 93

★★ **Macintosh TV, Apple Computer, 408/996-1010, $2079.** As a computer, this combination computer-television-CD player is sleek but slow. You can get faster performance and better expandability from several less-expensive Performa models. Apr 94

★★★★ **Mirror 800 Plus Color Scanner, Mirror Technologies, 612/633-4450, $1299.** Add the NuBus JPEG board ($300) and easy-to-use 35mm transparency scanning module ($599) and to get a nifty—if slow—desktop scanning package for a reasonable price. Jan 94

★★★ **PenDirect ADB, FTG Data Systems, 714/995-3900, $498.** Input device lets you manipulate items on the Macintosh screen using a special stylus called a light pen. It works well, although it seems ergonomically inferior to a mouse for routine tasks. Mar 94

★★★ **PowerLink Presentor, E-Machines, 503/646-6699, $499.** Simple, compact Duo dock wobbles a bit when plugged in but provides fine support for a variety of displays, plus ports for ADB, floppy drive, and sound output. Nov 93

★★★ **PowerPlate, Technöggin, 513/321-1777, $169.95 to $299.95.** Line of long-lived, external PowerBook battery packs, each of which lets you work for three to five times as long as the usual PowerBook battery. Unfortunately, the System 7 power manager periodically alerts you that your battery is not charging and dims the screen though battery pack has hours of time left. Mar 94

★★★ **RCD-202, Pinnacle Micro, 714/727-3300, $3995.** Writable CD-ROM drive is good for archiving data simply and inexpensively, but it's incompatible with many hard drives. Mar 94

★★★ **ScanMaker 35t, Microtek, 213/321-2121, $1999.** Speedy 35mm film scanner accommodates loose film and delivers a good image, but the included software is weak. Dec 93

★★★ **ScanPlus Color 6000 for Mac, PlusTek USA, 408/980-1234, $749.** Small, inexpensive sheet-fed color scanner is not appropriate if exact color matching is critical, but it is otherwise a good, economical option. Sep 93

★★★★ **ThinPack, VST Power Systems, 508/287-4600, $199.95.** External battery pack for PowerBooks is compact, with a lightweight design. It comes with handy power-management utilities. Mar 94

★★★ **TrakMate, Key Tronic Corp., 509/928-8000, $149.** Input device integrates a trackball into a wrist pad. While the design is interesting, it's not for everyone. Feb 94

★★★ **Wacom UD-1212R, Wacom Technology Corp., 206/750-8882, $749.** Graphics tablet with pressure-sensitive stylus is easy to use and highly customizable, though it's incompatible with AppleTalk and AppleTalk Remote. May 94

★★★★ **Yamaha YST-M10 Powered Monitor Speakers, Yamaha, 714/522-9240, $149.95.** Powered speakers have a good balanced sound and a great volume range at an outstanding price. Apr 94

MODEMS/NETWORK HARDWARE

★★★★ **AsantéHub 1012, Asanté Technologies, 408/435-8388, $1299.** This 12-port, 10BaseT Ethernet hub works right out of the box and is a premium device at a bargain price. Dec 93

★★★ **DataLink PB; Axcell Cellular Interface, Applied Engineering, 214/241-6060, $824.** If you need a full-blown office on the beach, this PowerBook cellular-modem package with automatic answering machine is a well-executed solution. Each recorded second requires 25K of disk space. Nov 93

★★★★★ **EtherWave, Farallon Computing, 510/814-5000, $129.** If you need to expand your network at a reasonable price with minimal fuss, get this Ethernet transceiver. Instead of providing only one 10BaseT twisted-pair jack, it includes a second jack that allows you to daisy-chain to another device through an additional 10BaseT line. May 94

★★★ **PerFit Port-A-Com, PerFit, 303/530-7333, $349.** Compact, ADB-powered, high-speed fax/data modem is difficult to configure, due to its Spartan and poorly organized documentation, but is still a solid product at a reasonable price. Nov 93

★★★ **SupraFaxModem 144PB, Supra Corp., 503/967-2400, $349.95.** If you're looking for a high-speed internal modem for your PowerBook, and you want to save a few bucks, this modem is worth considering. Disabling its fax software solved occasional transfer problems. Nov 93

PRINTERS

★★★ **Apple Color Printer, Apple Computer, 408/996-1010, $2349.** If you need large-format color output, but not precision color-matching, this well-built printer is a reasonable choice, although it doesn't support PostScript. Aug 93

★★★★ **Apple Portable StyleWriter, Apple Computer, 408/996-1010, $439.** Sleek, portable ink-jet printer weighs 4½ pounds and is a pleasure to use. It uses standard StyleWriter cartridges. Jan 94

★★ **Brother HJ-400, Brother International, 908/356-8880, $369.** Compact, 360-dpi ink-jet printer is fairly slow and does not allow background printing. Some large files require additional application memory to print correctly. May 94

★★★★ **DeskWriter 310, Hewlett-Packard, 800/752-0900, $379 to $455.** Versatile, low-cost ink-jet printer is a 4.3-pound, battery-powered portable. With its 60-page sheet feeder, it's also a great desktop printer; and with a $49 color print cartridge, it offers inexpensive three-color printing. Mar 94

★★★ **HP LaserJet 4ML, Hewlett-Packard, 800/752-0900, $1279.** Primarily for those of you who use a PC or work in a small, mixed-platform environment, this energy-efficient laser printer offers automatic port and language switching, and is a good buy. Its advanced PC features may not be worthwhile for those who use Macs only. May 94

★★★★ **LaserWriter Select 300, Apple Computer, 408/996-1010, $839.** Inexpensive, low-capacity printer is networkable, and an excellent buy, despite a few weaknesses. Add a 4MB SIMM to take advantage of the amazing PhotoGrade capabilities, which allow the printer to generate 91 shades of gray. Aug 93

★★ **LaserWriter Select 310, Apple Computer, 408/996-1010, $1099.** This big, slow printer is a true Adobe PostScript printer with both Mac and DOS ports, but it's not networkable or compatible with the Communications Toolbox, it can't automatically switch ports, and it doesn't have adjustable paper guides. Aug 93

★★★ **LaserWriter Pro 600 and 630, Apple Computer, 408/996-1010, $2099 to $2529.** From their paper handling to their print quality, these laser printers are Apple's best. Unfortunately, they don't support emulation sensing, and thus may be less desirable for mixed-platform offices than other possibilities. Jun 93

★★★★★ **LaserWriter Select 360, Apple Computer, 408/996-1010, $1599.** Low-cost, high-performance, 10 ppm printer is perfect for small LocalTalk or mixed networks. For bigger networks, consider buying more than one; they're more cost-effective than a 20-ppm printer. Apr 94

★★★ **MobileWriterPS, Mannesmann Tally Corp., 206/251-5524, $999.** Fast, portable printer is currently the only PostScript portable available. While the print quality is quite good on glossy laser paper, it's mediocre on inexpensive bond. Dec 93

★★ **Notebook Printer II, Citizen America, 310/453-0614, $399.** If weight and size are your biggest concerns in choosing a portable printer, and you print primarily in black and white, this thermal-fusion printer may be a good choice. If speed is at all an issue, however, other options may be preferable. Jun 94

★★★★ **Personal LaserWriter 320, Apple**

Computer, 408/996-1010, $959. If you've been holding out for a high-quality personal laser printer that's fast enough to share over LocalTalk, the small inconveniences of this 300-dpi printer are easily outweighed by its low price, good speed, and PostScript Level 2 support. **May 94**

★★★ **Phaser 200i Color Printer, Tektronix, 503/682-7377, $5995.** This thermal-wax color printer is fast and compact, with versatile paper-handling features. TekColor image-enhancement technologies provide excellent output quality that is, however, poor on letterhead and inexpensive photocopier bond. **Aug 93**

★★ **PrintPartner 10W, Fujitsu Computer Products, 408/432-6333, $2450.** While this multiplatform printer is fast and prints clearly, many Mac users will find it frustrating as it can't print some TrueType fonts. **Jul 93**

★★★ **Silentwriter 640, NEC Technologies, 508/264-8000, $800.** With 3MB of RAM, PostScript Level 2 support, and a 6-ppm engine, this printer is a capable performer. Generally, it represents hassle-free printing, but it doesn't handle single sheets of paper well. **Jun 94**

★★★ **Smart Label Printer Pro, Seiko Instruments, 408/922-5900, $299.95.** If you need to print only a few labels at a time, this label printer may be an expensive but good choice. It prints very quickly, and with excellent print quality. **May 94**

★★★★ **StyleWriter II, Apple Computer, 408/996-1010, $359.** Apple's ink-jet printer retains the best features of its predecessor, but costs less. New features, such as gray-scale printing and the ability to share the printer over a network, make it even more versatile. **Jun 93**

SYSTEMS/STORAGE

★★★ **Centris 610, Apple Computer, 408/996-1010, 4/80 $1859.** Slim-design Mac uses a 20MHz 68LC040 processor at a price-to-performance ratio that comes close to competing with Windows PCs; however, its expandability is severely limited. **Jun 93**

★★★★ **Centris 650, Apple Computer, 408/996-1010, 4/80 68LC040 $2699.** Moderately priced but fast 040 system offers three expansion slots and one drive bay, and (except for the base model) has built-in Ethernet, video circuitry, and a math coprocessor. **Jun 93**

★★★★ **DataPak 105, Mass Microsystems, 408/522-1200, $949 to $1049.** Well-built 105MB SyQuest drive comes with a decent, no-frills cartridge-formatting package and a copy of 7th Heaven. The preformatted cartridges have a lifetime warranty. **Sep 93**

★★ **DOS Compatible Card, Apple Computer, 408/996-1010, $399.** If you want to integrate a PC into your Macintosh, this card will let you—if you have a Centris or Quadra 610, don't need network support, and don't intend to upgrade to a Power Mac. All in all, it's pretty limited. **Jun 94**

★★★ **EtherDock, E-Machines, 408/541-6100, $699.** Heavy-duty Duo docking option is equipped with a full set of 11 ports, including an Ethernet port. The locking mechanism is alarmingly wobbly—although reliable enough to ensure a good connection. **May 94**

★★★ **Expert Pad PI-7000, Sharp Electronics Corp., 800/993-9737, $899.** Personal digital assistant features the advantages of the Newton, in a better industrial design and at a comparative price. If the battery lasted longer and the message network were implemented, the PDA revolution could begin. **Feb 94**

★★ **HP Optical Disk Library 10LC, Hewlett-Packard, 800/752-0900, $9495.** Optical jukebox may fill the need for 10 gigabytes of online storage, but its performance is poor, and the software lacks the features needed for adequate management. **Jan 94**

★★★★ **Infinity 105 Turbo, Peripheral Land, 510/657-2211, $795 to $894.** Small, light, quiet, inexpensive 105MB SyQuest drive is ingeniously packaged and ideal for both desktop and PowerBook use. **Sep 93**

★★★★ **LC III, Apple Computer, 408/996-1010, 4/80 $1349.** Base system comes equipped with a 25MHz 68030 processor and 512K of VRAM. This is a machine that fits the bill and the pocketbook of most home users and small-business owners. **Jul 93**

★★★★ **LC 575, Apple Computer, 408/996-1010, $1699.** For students and small-business professionals who want high power and the convenience of having everything integrated into one case, this 33MHz 68040 system is an ideal choice. **Jun 94**

★★★★ **MultiDisk 150, Iomega, 801/778-1000, $699.** Durable cartridges are one of the strongest reasons to choose this Bernoulli removable drive. Although it's slightly more expensive than a SyQuest drive, the drive is fast and reliable, and the disks are competitively priced. **Jun 93**

★ **NuTek Duet, NuTek USA Corp., 408/973-8799, $2996.** Mac workalike is both a PC and a Mac in a single box, but because of many incompatibilities and problems, the Duet is not a computer anyone should consider using for serious work. **Feb 94**

★★★ **OrangePC, Orange Micro, 714/779-2772, $1799.** NuBus board has a DOS processor, letting you have your Mac and a PC, too. It's fairly well executed, though there are some minor problems. **Oct 93**

★★★ **PLI 2.4 GB MiniArray, PLI, 510/657-2211, $4815.** Slick and elegant RAID drive worked beautifully in tests, but it costs more than other options and the QuickSCSI board is sensitive to minor SCSI problems. **Apr 94**

★★★★ **PowerBook 140 F/25 Upgrade, Digital Eclipse Software, 510/547-6101, $399.** By changing the oscillators and adding an FPU, Digital Eclipse changes PowerBook 140s into 170s, minus the active matrix screen. While the upgrade seems expensive, it's the only way to extend the viability of a 140. **Dec 93**

★★ **PowerBook 165c, Apple Computer, 408/996-1010, 4/80 $3399.** The passive matrix screen of this color notebook computer is dull and has noticeable afterimages, but if your expectations are reasonable, the speedy processor provides a pleasant work environment. **Jul 93**

★★ **PowerBook 180c, Apple Computer, 408/996-1010, 4/80 $4169.** The active matrix screen of this color notebook computer is beautiful but so small that its usefulness is very limited. **Sep 93**

★★★★ **PowerBook Duo 270c, Apple Computer, 408/996-1010, 4/240 $3099.** Notebook computer meets all the demands of power users; it weighs less than five pounds, features a color active matrix display, and offers longer battery life. The lack of a floppy drive can be inconvenient, though. **Feb 94**

★★★★ **Power Macintosh 6100/60, Apple Computer, 408/996-1010, base model $1819.** Given its price and performance, this Power Macintosh is hard to resist. When developers offer in PowerPC format the software that most business users run daily, this should be a system that will give you power to spare. **Jun 94**

★★★★ **Quadra 605, Apple Computer, 408/996-1010, 4/80 $979.** Never before has Apple offered so much performance for so little money. The performance and price of this 040-based machine match those of a standard entry-level 486SX-based Windows PC. **Mar 94**

★★★★ **Quadra 800, Apple Computer, 408/996-1010, 8/230 $4679.** Squat, yet curvy and attractive, this minitower system has fewer expansion opportunities than the Quadra 950, but just as much power. It's fast, slick, and moderately priced. **Aug 93**

★★★★ **Quadra 840AV, Apple Computer, 408/996-1010, 8/230 $4069.** Technological tour de force uses a 40MHz 68040 and an AT&T 3210 digital signal processor, and is brimming with sophisticated speech-recognition and audiovisual technology. Beware of some hardware and software incompatibilities. **Dec 93**

★★★ **SCSI MicroDock, Newer Technology, 316/685-4904, $175.** Tiny PowerBook Duo docking station is just under 4½ ounces and barely 5 inches long. It adds only an ADB port and a SCSI port—but both are useful. **May 94**

★★★★ **SledgeHammer2000FMF, FWB, 415/474-8055, $3179.** RAID drive is both fast and inexpensive. Although it can be a bit noisy when accessing data, it's a good deal. **Apr 94**

★★★ **SmartStack, Envisio, 612/628-6288, SmartSource $119; SmartModules $289 to $1379.** The SmartStack line of modular storage peripherals may be neatly stacked on top of a common power supply to reduce desktop clutter and cabling problems. **Sep 93**

★★★ **Turbo 040, DayStar Digital, 404/967-2077, $1899.** This accelerator card is equipped with the fastest 68040 chip available, and is as fast as or faster than any Macintosh in processor-intensive tasks. For the price, however, it may make more sense to trade up to a faster computer. **Dec 93**

VIDEO/DISPLAY

★★★ **AudioVision 14 Display, Apple Computer, 408/996-1010, $769.** Monitor integrates audio and video with built-in speakers that produce surprisingly rich, full-bodied sound. The display, while nice, is small for multimedia work. **Dec 93**

★★★ **Dycam Model 3, Dycam, 818/998-8008, $895.** Low-end, digital still camera is easy to use, and is a solid product if Instamatic grade gray-scale meets your image-quality requirements. **Sep 93**

★★★ **Editing Aces Suite, RasterOps, 801/785-5750, $3899.** Video professionals can record and play back full-screen movies in 24-bit color with 16-bit CD-quality sound with these products. Despite some flaws, this package represents a step forward in QuickTime technology. **Nov 93**

★★★ **Intellicolor Display/20, Radius, 408/434-1010, $3199.** Although with its exceptional brightness and clarity this monitor would be a fine addition to any designer's desk, the included Intellicolor software, which lets you control the settings of your display, doesn't offer much added value. **Apr 94**

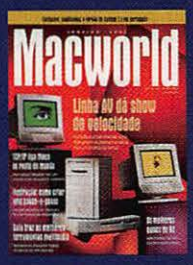
★★★★ **MovieMovie, Sigma Designs, 510/770-0100, $349.** This 7-inch NuBus video-capture board may be what you've been waiting for. The price is right, and the addition of on-board audio input is a plus, even if it is only mono. **Dec 93**

★★★ **PaintBoard Turbo, RasterOps, 408/562-4200, $1499.** Midrange video board supports 24-bit color on monitors up to 17 inches and resolutions as high as 1024 by 768 pixels. If you can live without changing resolutions on the fly, it's a reasonably good deal. **Oct 93**

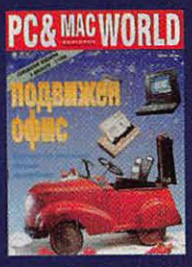
★★★ **VideoToolkit 2.0.1, Abbate Video, 508/376-3712, $279.** Despite a few rough edges, this is an attractive, inexpensive solution for those who need to catalog and edit videotapes on a budget. **Sep 93** m



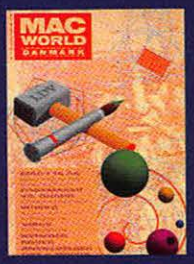
Australia



Brazil



Bulgaria



Denmark



France



Germany



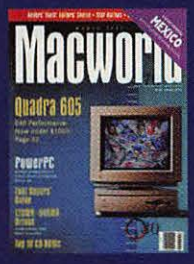
Italy



Japan



Korea



Mexico

Now You Can Cover the World

With The Macworld Global Network.

With the Macworld Global Network, you can start covering the world. Because Macworld reaches over 3 million people in over 20 countries. Now that's market reach. So, if you're interested in expanding your sales to the world, then call the Macworld Global Network, today.



Netherlands



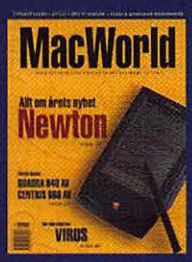
Norway



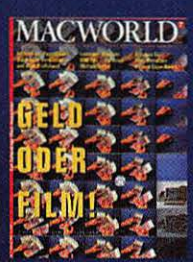
Portugal



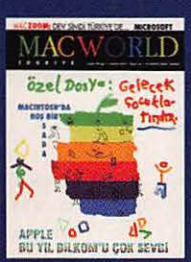
Spain



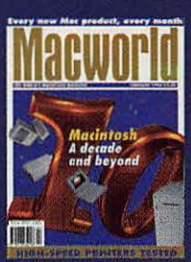
Sweden



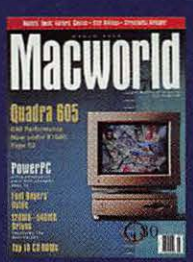
Switzerland



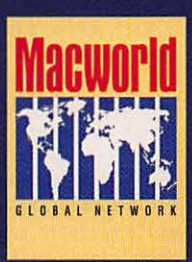
Turkey



United Kingdom



United States



Streetwise Shopper

SPECIAL HARDWARE AND SOFTWARE BUYING OPPORTUNITIES

Selected and edited by Charles Barrett

The following listings represent special promotions being sponsored by Macintosh vendors and their resellers. Each listing indicates which products have been awarded a star rating in *Macworld's Reviews* (products rated ★★ or lower are not eligible for inclusion), have been selected as an Editors' Choice, or have won a World-Class award. In some cases, the editorial evaluation quoted is for an earlier product version. The ◀ symbol indicates that the product is Power Mac related.

When placing an order, please mention that you saw the offer in *Macworld.* Should any problems arise, contact the *Streetwise Shopper* editor by fax (415/442-0766), phone (415/978-3241), or mail (*Macworld,* 501 Second St., San Francisco, CA 94107).

Vendors and resellers desiring to have products and services included in this section are encouraged to contact the *Streetwise Shopper* editor with particulars.

BUNDLES

Collage 1.0.1 + Adobe Photoshop 2.51 Specular International is bundling its $349 Collage image-compositing software (Jul 94 ★★★) with Adobe's $895 color-image editor (Jun 93 ★★★★ for version 2.5; 1993 World-Class) for $699. Available through MacWarehouse (800/255-6227). *Offer not to expire before 7/31/94.*

DayStar Turbo 040 + Secondary Cache DayStar Digital is now offering its 33MHz and 40MHz Turbo 040 and 040i accelerator boards bundled with a 128K high-speed static RAM cache for $949, $1149, and $749. This represents a $100 savings over purchasing a board and FastCache Turbo separately. Call 800/962-2077 for more information.

Epson ES-800C-ProMAC + Astound 1.0 + $50 Rebate Epson is including a free copy of Gold Disk's $399 Astound multimedia application (Nov 93 ★★★★) and offering a $50 rebate with the purchase of this $1649 24-bit color scanner (see Nov 93 "Low-Cost Color Scanners"). Rebate forms available at point of purchase, or call 800/289-3776. *Offers expire 7/31/94.*

Infini-D 2.6 + Adobe Premiere 3.0 Specular International is bundling its $695 3-D design application (Jan 93 ★★★★ for version 2.0) with Adobe's $695 QuickTime video-editing software (Jan 93 ★★★★ for version 2.0) for $679. Available through MacWarehouse (800/255-6227). *Offer not to expire before 7/31/94.*

Macintosh Quadra 605 + 8 applications Apple Computer is now including the following preinstalled applications with its Quadra 605 systems (Mar 94 ★★★★): Claris's $299 ClarisWorks 2.0 integrated software (Aug 93 ★★★★); Intuit's $69.95 Quicken 4 personal-finance package (Nov 93 ★★★★); ASD Software's $149 FileDuo 1.02 backup software; Gold Disk's $399 Astound 1.0 multimedia application (Nov 93 ★★★★); No Hands Software's $189.95 Common Ground 1.1 electronic-document-distribution program (Oct 93 ★★★★ for version 1.0); FIT Software's $169 Full Contact personal information manager; Working Software's $49.95 Working Watermarker 1.02 printing utility (Jan 94 ★★★); and SoftKey International's $59.95 American Heritage Electronic Dictionary, Third Edition. This bundle does not include master disks for the installed applications. In addition, the price of the Quadra 605 8/160 has been reduced by 16%, to $1069. Call 800/538-9696 for reseller information.

PageMaker 5.0 + Ofoto 2.03 Customers who order either Aldus's complete $895 PageMaker 5.0 desktop publishing program (Nov 93 ★★★★) for $579, or the 5.0 upgrade for $199, can also buy Light Source's $395 Ofoto scanning software (Jul 93 ★★★ for version 2.0; 1993 World-Class) from MacWarehouse for $99. Call 800/255-6227 to order. *Offer not to expire before 7/31/94.*

PowerPlate Battery System + CPU 2.0 Technöggin is now including a free copy of Connectix Corporation's $99 CPU PowerBook utility (Sep 93 ★★★★) with its PowerPlate line of external PowerBook battery systems priced as follows: the Mini 3 for $169.95; the 3x for $239.95; and double-capacity 5x for $299.95. For more information, call 800/305-7936.

Professor Office Individual Software has combined a $69.95 Microsoft Word 5.1 tutorial and a $69.95 Microsoft Excel 4 tutorial, together with a bonus copy of its $29.95 Learn to Use Mac tutor, into a $49.95 suite of interactive computer-based training solutions for boosting productivity—particularly for Microsoft Office users. Available through resellers for under $30. Call 800/822-3522 for further information.

◀ **RISC Workgroup Server + GraceLAN Server Manager 3.0** Apple Computer is providing a complimentary copy of TechWorks' $395 GraceLAN Server Manager to customers who purchase any one of its three new PowerPC processor–based Workgroup Servers—the 6150 for $4219, the 8150 for $7459, or the 9150 for $9229—and return the registration card. *Offer not to expire before 12/31/94.*

SunPack PB + CPU 2.0 Keep It Simple Software is offering Connectix Corporation's $99 CPU PowerBook utility (Sep 93 ★★★★) for $49 when customers purchase its $229 portable solar panel for $189. The SunPack can supplement the battery of a running PowerBook, as well as recharge nickel-cadmium power packs. Call 800/327-6882 for more information and to order.

SIDEGRADES/UPGRADES

Hard Disk ToolKit 1.5.1 FWB is offering this $199 hard-drive–management utility (Jan 93 ★★★ for version 1.1.2 of the $79 Personal Edition) for $99 to owners of any non-Apple formatting utility. Available direct (415/474-8055) or through MacConnection (800/800-2222).

◀ **QuarkXPress 3.3** Quark is offering a $999 PowerPC upgrade of this desktop publishing system (Nov 93 ★★★★ for version 3.2; 1993 World-Class) at the introductory price of $199 until October, and for $229 from then through December. For more information, call 800/788-7835. *Offers expire 10/1/94 and 12/31/94.*

Virex 5.0 Datawatch Corporation is offering this $99.95 antivirus utility (Jul 94 "Virus Killers" Editors' Choice; May 94 ★★★★) for $39.95 to users of Symantec AntiVirus for Macintosh (SAM) or Central Point Software's MacTools. Call MacWarehouse (800/225-6227) or Datawatch (919/549-0711) for qualification requirements and to order. *Offer expiration extended to 8/31/94.*

SPECIAL DISCOUNTS/REBATES/OFFERS

Apple Exchange Program Apple Computer, through remarketer Micro Exchange, is offering trade-in dollars, which must be applied against the purchase of new Apple equipment, to owners of virtually any name-brand CPU, printer, or monitor. Based on a trade-in pricing schedule, resellers provide customers with a firm price quote within 24 hours, good for 30 days. If Micro Exchange does not revise the price quote when it evaluates the old equipment, Micro issues a check directly to the customer within ten days. Call 800/538-9696 for reseller information.

Colorize Jr. DS Design is offering a special introductory price of $79 on this $99 utility for coloring black-and-white TIFF line drawings, clip art, illustrations, and scans. Colorize Jr. automatically traps colors as you paint. Offer includes the option to upgrade to DS Design's $399 Colorize 2.0—a full version that includes the ability to do gradations, blends, and airbrush effects—for $299. Call 800/745-4037 for more information and to order. *Offer expires 7/31/94.*

Medieval & Renaissance Clip Art Library Canned Art Connection is offering BBL Typographic's $250 collection (Volumes 1 through 6) of 437 ornaments and decorative alphabets from the 14th, 15th, and 16th centuries for $195. Call 800/455-4278 for further details and to order. *Offer expires 7/31/94.*

PortfolioMaker 1.2 Crit is offering a special introductory price of $79 (plus $7.95 S&H) on this $129 program that makes it possible to create an electronic portfolio of up to twenty 24-bit color images with text on a single floppy disk. The program includes a floating palette of authoring tools that is deleted once an electronic portfolio is completed and locked. Call 800/410-2748 to order. *Offer not to expire before 7/31/94.*

XpressServe Emerald Systems is offering this $795 network-file-server–based backup software for Novell NetWare LANs at the special introductory price of $595. Call 800/767-2587 for more information. *Offer expires 6/30/94.* ■

DIRECT CONNECTIONS

SHIPPING DRIVES FOR 7 YEARS !!

Fully Compatible Power PC Drives

800-572-4305
30 DAY MONEY-BACK

TECH:612-937-9604 FAX:612-937-6285 HOURS: M-F 8:00-6PM CST

HARD DRIVES

FUJITSU — 5 YEAR WARRANTY

CAPACITY	SIZE	ACCESS	INTERNAL	EXTERNAL
240MB*	2.5"	14MS	$ 375	$ 435
530MB	3.5"	9MS	$ 465	$ 525
1.2GIG	3.5"	8.5MS	$ 825	$ 885

Seagate — 5 YEAR WARRANTY

CAPACITY	SIZE	ACCESS		EXTERNAL
1.2GIG	3.5"	9MS	ST31200N	$ 899
2.4GIG	3.5"	9MS	ST12400N	$ 1555
2.5GIG	3.5"	8MS	Barracuda 2	$ 1855
2.5GIG	3.5"	8MS	WIDE	CALL
3.4GIG	5.25"	10MS	Elite 3	$ 2195
9.0GIG	5.25"	11MS	Elite 9	$ 4995

CONNER — 5 YEAR WARRANTY

CAPACITY	SIZE	ACCESS		EXTERNAL
545MB**	3.5"	12MS	CFA540S	$ 490
1.0GIG	3.5"	9MS	CFP1060S	$ 815

Quantum — 5 YEAR WARRANTY

CAPACITY	SIZE	ACCESS		EXTERNAL
1.0GIG	3.5"	9MS	E1080S	$ 815
22GIG	3.5"	9.5MS	E2160S	$ 1359

HITACHI — 5 YEAR WARRANTY

CAPACITY	SIZE	ACCESS	INTERNAL	EXTERNAL
3.7GIG	5.25"	12.8 MS	$ 1845	$ 1945

MONITORS

Sony	GDM-17SE1	1159
Sony	GDM-2036S	1999
Sony	GDM-2038S	2189
RasterOps	Horizon 24	2259
RasterOps	Paintbd Turbo	1159
RasterOps	8XL	459
RasterOps	8Li	339

OPTICAL DRIVES

INCLUDES ONE CARTRIDGE — 1 YEAR WARRANTY

CAPACITY	MODEL	ACCESS	EXTERNAL
128MB	Fujitsu	30MS	$ 765
230MB	Fujitsu	30MS	$ call
650MB	Ricoh Hyperspace	28MS	$ 1799
1.3GIG	Ricoh	40MS	$ 2459
1.3GIG	Sony	40MS	$ 2299
2.0GIG	Hitachi	40MS	$ 2799

CD ROMS — 1 YEAR WARRANTY

Toshiba 4101		$ 320
Toshiba 3401		$ 439
Sony CDU-561		$ 385
Ricoh Playwright 1000	Recordable CD Make your own!	$ 3899

DIRECT CONNECTIONS 7668 EXECUTIVE DR. EDEN PRAIRIE, MN 55344.
30 day money back does not apply towards monitors. * 1 yr warranty.
** 2 yr warranty. Gov't, Corp. and Univ. P.O's accepted. Thanks.

TAPE BACKUP SYSTEMS

INCLUDES TAPE + RETROSPECT SOFTWARE — 2 YEAR WARRANTY

CAPACITY	MODEL	MEDIA	INTERNAL	EXTERNAL
250MB	Tandberg TDC 3660	DC6250	$ 445	$ 499
525mb	Tandberg TDC 3820	DC6250	$ 565	$ 625
1.3-2GIG	Archive 4320*	4MM	$ 839	$ 899
1.3-8GIG	Archive Turbo*	4MM	$ 1039	$ 1099
1.3-5GIG	Exabyte 8205	8MM	$ 1539	$ 1599
1.3-10GIG	Exabyte 8505	8MM	$ 2179	$ 2279
4.0-8GIG	Sony 4000	4MM	$ 1089	$ 1149
4.0-8GIG	Sony 5000 DDS-2	4MM	$ 1189	$ 1249

MEDIA

60M	Tape	$ 10	128MB	Optical	$ 35
90M	Tape	$ 12	650MB	Optical	$ 79
112M	Tape	$ 18	1.3GIG	Optical	$ 105
120M	Tape	$ 22	2.0GIG	Optical	$ 120

RAID SYSTEMS



1.0 GIG RAID	$ 1499
2.0 GIG RAID	$ 2199
6.0 GIG RAID	$ 3999

* UP TO 84GIG CUSTOM DESIGNED.
* FAST AND WIDE SCSI II INTERFACE.

Circle 121 on reader service card

DIGITAL AXIS INTERNATIONAL



17" Trinitron $769

- Plug & Play with On-Board Video for the Quadras, AVs, Centris, LCIII, **PowerMacs!!**
- WYSIWYG, 832x624, .26mm dot, 75Hz
- 1 Year Warranty
- Dealers, call for volume discounts
- **$1,149** with 24-bit Accl. NuBus Card
- **$1,389** Ikegami CN-20A 20" Multisync

30-DAY Satisfaction Guarantee!
One Year Free On-Site Service!





Kodak ColorEase PS
Color DyeSub Printer/PS level 2.....$6,589

UMAX Scanners

UMAX 630 -600dpi	$579
UMAX 840 -800dpi	$690
UMAX 1260 -1200dpi	$986
UMAX 1200SE -1200dpi/PhotoShop 2.5.1	$2,189
TypeReader OCR Software, with scanner purchase	$99
PhotoShop 2.5.1 with scanner purchase	$209
PhotoShop LE with scanner purchase	$109

UMAX Transparency Adapter **$449**



PowerBook SCSI Switch
Includes DOCK & SCSI mode switching
$31



Wacom Digitizer
12" x 18" Tilt with 2 Handed Input
Calligraphy/Cordless Pen
$719
Wacom #UD1218RM

DIGITAL AXIS

512-329-7001
800-691-7111
Fax 512-327-0921

THE INTERNATIONAL DEALER SUPPORT NETWORK

Corporate and Government P.O.s accepted, Subject to Approval. Wire Transfer, COD — All Major Credit Cards Accepted. UPS, FedEx, DHL 2-day to Europe • 5000 Plaza On The Lake, STE 250, Austin, TX, USA 78746

MW7.94

Circle 83 on reader service card

Macworld Advertiser Index

Say you saw it in Macworld. To purchase products advertised in this issue call the phone numbers below or use the reader service number for our FastFacts Product Information Card located after the product index.

Page No.	Advertiser	Reader Srvc. No.	Phone
45-48	Adobe	–	–
76	AEC Software	44	800/450-1982
8	Agio	–	800/688-2446
222-223	Alliance Peripheral Systems	62	800/874-1428
36-37	American Power Conversion	72	800/788-2208
15	Apple Computer	–	–
16-17	Apple Computer	–	–
30	Apple Computer	–	800/538-9696
57	Apple Computer	–	–
55	Apple Computer	–	–
68	Apple Computer	–	–
133-135	Apple Computer	–	–
66	Attain Corporation	6	617/776-1110
32	Berkeley Systems	–	800/248-0800
230-231	BottomLine Distribution	63	512/472-4956
50	Caere Corporation	69	800/535-SCAN
44	CDROM Expo	–	617/361-8000
218-219	Club Mac	96	800/CLUB MAC
191	CompuServe	66	800/848-8199
94-95	Computer Discount Warehouse	2	800/861-4CDW
52	Connectix	189	800/950-5880
27	Contemporary Cybernetics Group	– 188	– 800/873-9000
88	Corel Corporation	78	800/836-3729
228	CRA Systems	20	800/375-9000
59	Dantz Development Corp.	26	–
26	Datawatch	37	919/549-0711
163	Dayna Communications	161	800/443-2962
182	Delphi	173	800/695-4005
82	Delrina Corporation	137	800/268-6082
24	Deneba Software	57	800/6-CANVAS
231	DGR Technologies	65	800/235-9748
206	Digital Axis	83	800/691-7111
156-157	Digital Equipment Corporation	120	800/DIGITAL
206	Direct Connections	121	800/572-4305
272-273	Educorp	157	800/843-9497
10	Engineered Software	12	910/299-4843
12-13	Epson	–	800/BUY-EPSON
220-221	Express Direct	81	800/765-0020
153	Focus Enhancements	201	800/538-4888
142	Fractal Design	190	800/647-7443
143	Frame Technology	–	800/U-4-FRAME
177	Fujitsu	202	800/831-4094
181	GDT Softworks	32/42	800/663-6222
74	HSC Software	5	310/392-8441
28-29	IBM	179	–
10	Image Club Graphics	50	800/387-9193
174	Insignia Solutions	68	800/848-7677
6-7	Intel Corporation	–	800/395-7009
BC	Kensington Microware Ltd.	–	800/535-4242
19-23	La Cie	52	800/999-1488
86	La Cie	51	800/999-0499
178	LaserMaster	49	800/950-6868
38	LaserMaster	43	800/950-6868
72	MacAcademy	106	800/527-1914
79-81	MacConnection	–	800/800-3333
211-217	MacMall	131	800/222-2808
224-225	MacNews	172	800/723-7744
226	MacProducts, USA	175	800/622-8721
104-105	Macromedia	21	–
8	MacTable/ScanCo	–	800/722-6263
234-235	MacWarehouse	150	800/255-6227
168-172	Macworld Boston Expo	–	617/361-8000
114	Macworld Expo	–	–
204	Macworld Global Network	–	–
232	MegaHaus Corporation	245	800/786-1184
124	MicroNet Technology, Inc.	139	800/800-DISK
IFC-1	Microsoft Corporation	–	–
185	Microtek Lab, Inc.	287	800/654-4160
90	Mirror Technologies	58	800/643-4142
186	Mitsubishi Display Products	261	800/843-2515
53	Mobius Technologies Incorporated	109	800/800-4334
14	Momentum Incorporated	8	800/263-0088
56	Multi-Ad Services	187	800/447-1950
2-3	NEC Technologies	25	800/NEC-INFO
120-121	NEC Technologies	28	800/NEC-INFO
IBC	NEC Technologies	16	800/NEC-INFO
114	NewGen Systems	74/75	800/756-0556
34	nView Corp.	117	800/736-8439
14	Panelight Display Systems, Inc.	1	800/726-3599
33	Pinnacle Micro	115	800/553-7070
141	Pinnacle Micro	178	800/553-7070
11	Polaroid	119	800/816-2611
149	Polaroid	295	800/816-2611
233	ProDirect	135	800/524-9952
70	QMS	–	800/392-7559
268-270	Quality Computers	263	800/777-3642
60-61	Radius	14	800/227-2795
150	RasterOps	90	800/SAY-COLOR
138	Specular	41	800/433-7732
35	Statsoft	99	918/583-4149
229	SuperMicro	126	800/352-3415
84	SyQuest	249	800/245-2278
155	Systat	29	708/864-5670
167	Technöggin	94	800/305-7936
9	Tektronix	143	800/835-6100
236-237	The Mac Zone	70	–
227	Third Wave	186	800/624-9307
18	TRIAM, Inc.	211	714/530-9984
128-129	WordPerfect Corporation	–	800/526-7820
92	Xerox Imaging Systems	100	800/248-6550
164	Xircom	290	800/438-4526

TURN TO THE MACWORLD SHOPPER ON PAGE 238 TO FIND ADDITIONAL ADVERTISERS.

InfoFAX

For instant faxed back information,

call 1-800-234-0455

enter extension 502 for QMS Incorporated

Macworld Product Index

A quick and easy product index from Macworld. Simply use this index to find the page or advertiser of the products which interest you. Then, use the reader service number for our FastFacts Product Information Card located on the following page.

Page No.	Advertiser	Reader Srvc. No.
SOFTWARE		
BUSINESS		
76	AEC Software	44
16-17	Apple Computer	—
30	Apple Computer	—
55	Apple Computer	—
68	Apple Computer	—
66	Attain Corporation	6
82	Delrina Corporation	137
IFC-1	Microsoft Corporation	—
35	Statsoft	99
155	Systat	29
128-129	WordPerfect Corporation	—
CAD/CAM		
10	Engineered Software	12
CD ROM		
88	Corel Corporation	78
272	Educorp	157
COMMUNICATION		
82	Delrina Corporation	137
DATA MANAGEMENT		
143	Frame Technology	—
EDUCATION		
268-270	Quality Computers	263
ENTERTAINMENT		
32	Berkeley Systems	—
GRAPHICS/DTP		
45-48	Adobe	
88	Corel Corporation	78
24	Deneba Software	57
142	Fractal Design	190
74	HSC Software	5
10	Image Club Graphics	50
104-105	Macromedia	21
56	Multi-Ad Services	187
138	Specular	41
MULTIMEDIA		
45-48	Adobe	—
142	Fractal Design	190
104-105	Macromedia	21
OCR		
50	Caere Corporation	69
92	Xerox Imaging Systems	100
SECURITY		
26	Datawatch	37
STATISTICAL		
35	Statsoft	99
155	Systat	29
UTILITIES		
32	Berkeley Systems	
52	Connectix	189
59	Dantz Development Corp.	26
181	GDT Softworks	32/42
174	Insignia Solutions	68
WORD PROCESSING		
128-129	WordPerfect Corporation	—
HARDWARE		
BOARDS		
60-61	Radius	14
150	RasterOps	90
CD ROM		
272-273	Educorp	157
IBC	NEC Technologies	16
229	SuperMicro	126
COMPUTER SYSTEMS		
16-17	Apple Computer	—
230-231	BottomLine Distribution	63
228	CRA Systems	20
231	DGR Technologies	65
220-221	Express Direct	81
6-7	Intel Corporation	—
227	Third Wave	186
DIGITIZERS/SCANNERS		
15	Apple Computer	—
50	Caere Corporation	69
206	Digital Axis	83
12-13	Epson	—
177	Fujitsu	202
185	Microtek Lab, Inc.	287
90	Mirror Technologies	58
149	Polaroid	295
DISPLAY		
133-135	Apple Computer	—
228	CRA Systems	20
206	Digital Axis	83
224-225	MacNews	172
90	Mirror Technologies	58
186	Mitsubishi Display Products	261
53	Mobius Technologies Incorporated	109
120-121	NEC Technologies	28
34	nView Corp.	117
14	Panelight Display Systems, Inc.	1
11	Polaroid	119
18	TRIAM, Inc.	211
EXPANSIONS/UPGRADES		
53	Mobius Technologies Incorporated	109
HARD DISKS/STORAGE		
222-223	Alliance Peripheral Systems	62
230-231	BottomLine Distribution	63
218-219	Club Mac	96
27	Contemporary Cybernetics Group	188
231	DGR Technologies	65
206	Direct Connections	121
19-23	La Cie	52
86	La Cie	51
226	MacProducts, USA	175
232	MegaHaus Corporation	245
HARD DISKS/STORAGE		
124	MicroNet Technology, Inc.	139
33	Pinnacle Micro	115
141	Pinnacle Micro	178
233	ProDirect	135
229	SuperMicro	126
84	SyQuest	249
INPUT DEVICES		
BC	Kensington Microware Ltd.	—
MULTIMEDIA		
14	Panelight Display Systems, Inc.	1
NETWORKING		
36-37	American Power Conversion	72
163	Dayna Communications	161
153	Focus Enhancements	201
14	Momentum Incorporated	8
164	Xircom	290
POWERBOOK		
BC	Kensington Microware Ltd.	—
167	Technöggin	94
181	GDT Softworks	32/42
PRINTERS		
156-157	Digital Equipment Corporation	120
181	GDT Softworks	32/42
38	LaserMaster	43
178	LaserMaster	49
2-3	NEC Technologies	25
114	NewGen Systems	74/75
70	QMS	—
9	Tektronix	143
VIDEO		
60-61	Radius	14
150	RasterOps	90
SERVICES		
ON LINE		
57	Apple Computer	—
191	CompuServe	66
182	Delphi	173
TRADESHOWS/CONFERENCES		
44	CDROM Expo	—
168-172	Macworld Boston Expo	—
114	Macworld Expo	—
TRAINING		
72	MacAcademy	106
ACCESSORIES		
FURNITURE		
8	Agio	
8	MacTable/ScanCo	
MISCELLANEOUS		
8	MacTable/ScanCo	
MAIL ORDER		
222-223	Alliance Peripheral Systems	62
218-219	Club Mac	96
94-95	Computer Discount Warehouse	2
206	Direct Connections	121
220-221	Express Direct	81
79-81	MacConnection	—
211-217	MacMall	131
224-225	MacNews	172
226	MacProducts, USA	175
234-235	MacWarehouse	150
232	MegaHaus Corporation	245
233	ProDirect	135
268-270	Quality Computers	263
227	Third Wave	186

Macworld

JUST FOR YOU. FREE PRODUCT INFORMATION FROM MACWORLD.

There's no cost or obligation. We even pay the postage! Simply fill in the questionnaire, then circle the numbers on the card below for the products that interest you. Numbers for advertised products can be found in the ad and in both the Product Index and Ad Index. Fold card and mail. No staples please.

FASTFAX
For faster results just fax this sheet to +1-413-637-4343. Please indicate your fax number where indicated.

Please answer these questions so that we may better serve you.

A. Including yourself, approximately how many people are employed at your entire work-site (i.e., employees in your office, building, or cluster of buildings)? (Check one.)

01 ❑ 1000+
02 ❑ 999 - 100
03 ❑ 99 - 25
04 ❑ Under 25

B. Which of the following computers are installed at this entire work-site? (Check all that apply.)

05 ❑ Apple Workgroup Servers/ Mac Quadra-series
06 ❑ Mac Centris-series/II-series/LC III/ Performa 600/450/SE 30
07 ❑ Mac LC/LC II/Performa 430/405/ 400/200/Classic-series/SE/Plus/ 512K/128K/Portable
08 ❑ Mac PowerBook-series/Duo-series

C. What is the total number of Macs installed at this entire work-site? (Check one.)

D. For how many Macintosh computers within this entire work-site do you have purchase involvement for products and/ or services? (Check one.)

	C	D
500+	❑ 09	❑ 15
499 - 100	❑ 10	❑ 16
99 - 50	❑ 11	❑ 17
49 - 10	❑ 12	❑ 18
9 - 1	❑ 13	❑ 19
None	❑ 14	❑ 20

E. In which ways are you ever involved in purchase decisions for Macintosh products at this entire work-site? (Check all that apply.)

21 ❑ Initiate/Determine need for product/capabilities/features
22 ❑ Evaluate, recommend, or approve brands/models
23 ❑ Evaluate, recommend, or approve purchase source
24 ❑ Authorize purchases

F. Over the next 12 months, how much will this entire work-site spend on Macintosh products and/or services? (Check one.)

25 ❑ $1 million or more
26 ❑ $999,999 – $500,000
27 ❑ $499,999 – $100,000
28 ❑ $99,999 – $50,000
29 ❑ $49,999 – $10,000
30 ❑ Under $10,000

G. Considering the entire work-site, which of the following Macintosh hardware and software products are currently installed? (Check all that apply.)

31 ❑ Business software (Word processing, spreadsheet, database, etc.)
32 ❑ Graphics/publishing software
33 ❑ Monitors/displays
34 ❑ Printers/scanners
35 ❑ Networking/communications hardware and/or software
36 ❑ Multimedia/AV hardware and/or software
37 ❑ Mobile computing products (PowerBooks, peripherals, software, etc.)

H. What is your primary job function? (Check one.)

38 ❑ Computer Reseller/VAR/VAD
39 ❑ MIS/DP/IS/Network Management
40 ❑ Engineering
41 ❑ R&D/Scientific
42 ❑ Corporate/General Management
43 ❑ Accounting/Finance
44 ❑ Marketing/Sales/PR/ Communications
45 ❑ Art/Design/Creative Services

Thank You!

Please print or type all information.

Title_____

Co._____

Phone_____

Fax_____

Free Product Information

1	2	3	4	5	151	152	153	154	155
6	7	8	9	10	156	157	158	159	160
11	12	13	14	15	161	162	163	164	165
16	17	18	19	20	166	167	168	169	170
21	22	23	24	25	171	172	173	174	175
26	27	28	29	30	176	177	178	179	180
31	32	33	34	35	181	182	183	184	185
36	37	38	39	40	186	187	188	189	190
41	42	43	44	45	191	192	193	194	195
46	47	48	49	50	196	197	198	199	200
51	52	53	54	55	201	202	203	204	205
56	57	58	59	60	206	207	208	209	210
61	62	63	64	65	211	212	213	214	215
66	67	68	69	70	216	217	218	219	220
71	72	73	74	75	221	222	223	224	225
76	77	78	79	80	226	227	228	229	230
81	82	83	84	85	231	232	233	234	235
86	87	88	89	90	236	237	238	239	240
91	92	93	94	95	241	242	243	244	245
96	97	98	99	100	246	247	248	249	250
101	102	103	104	105	251	252	253	254	255
106	107	108	109	110	256	257	258	259	260
111	112	113	114	115	261	262	263	264	265
116	117	118	119	120	266	267	268	269	270
121	122	123	124	125	271	272	273	274	275
126	127	128	129	130	276	277	278	279	280
131	132	133	134	135	281	282	283	284	285
136	137	138	139	140	286	287	288	289	290
141	142	143	144	145	291	292	293	294	295
146	147	148	149	150	296	297	298	299	300

Free Macworld Shopper Information

401	402	403	404	405	501	502	503	504	505
406	407	408	409	410	506	507	508	509	510
411	412	413	414	415	511	512	513	514	515
416	417	418	419	420	516	517	518	519	520
421	422	423	424	425	521	522	523	524	525
426	427	428	429	430	526	527	528	529	530
431	432	433	434	435	531	532	533	534	535
436	437	438	439	440	536	537	538	539	540
441	442	443	444	445	541	542	543	544	545
446	447	448	449	450	546	547	548	549	550
451	452	453	454	455	551	552	553	554	555
456	457	458	459	460	556	557	558	559	560
461	462	463	464	465	561	562	563	564	565
466	467	468	469	470	566	567	568	569	570
471	472	473	474	475	571	572	573	574	575
476	477	478	479	480	576	577	578	579	580
481	482	483	484	485	581	582	583	584	585
486	487	488	489	490	586	587	588	589	590
491	492	493	494	495	591	592	593	594	595
496	497	498	499	500	596	597	598	599	600

❑ Check box and fill in the appropriate information to subscribe to Macworld. You will be billed $24.00 for a 1-year (12 issue) subscription (U.S. only).

Expires Sept. 8, 1994 S1 July 1994

50% RECYCLED PAPER
10% Post Consumer Waste

Please print or type all information.

Name _____

Address _____

City _____

State _____ Zip _____

FREE PRODUCT INFORMATION.

Get valuable information about the products that interest you. There's no cost; no obligation. Just fill out both sides of this FASTFACTS Information form. Circle the numbers for the desired products. Then mail the card. We pay the postage! For even faster results fill out and send the card via our FASTFAX. Now fast... get the facts, the competition's gaining on you.

Macworld

FOLD HERE AND CLOSE WITH TAPE. DO NOT STAPLE!

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 215 PITTSFIELD, MA

POSTAGE WILL BE PAID BY ADDRESSEE

Macworld
Reader Service Department
P.O. Box 5299
Pittsfield, MA 01203-9906

Creative Computers' MacMall is the first full line...

Authorized
Catalog Reseller

Now you can order Apple® Macintosh® computers by mail.

Creative Computers' MacMall announces a breakthrough partnership with Apple® Computer, Inc. that will forever change the way you buy Apple Macintosh® products. As the first Apple Authorized Catalog Reseller, *Creative Computers' MacMall* brings you the same level of award-winning service and low pricing that has made us the #1 Apple Macintosh® Reseller in Southern California *and* the fastest growing Macintosh mail-order company. You can now purchase any Apple product by mail through our catalogs. You benefit from a full Apple warranty, toll-free technical support, helpful salespeople, and the peace of mind that comes with buying from a company that is an Apple Authorized Catalog Reseller. For a free copy of our giant catalog, call **1-800-222-2808** today or fill out the form below and we will send you one right away.

Look over the following pages for a sample of our great selection and pricing.



For a copy of our catalog, call

1-800-222-2808

Hours: Monday–Friday 6am to 6pm (pst)
Saturday/Sunday 8am to 5pm (pst)

☐ *Send me a one year catalog subscription*

Name _____

Address _____

City _____ State _____ Zip _____

Mail to: MacMall, Dept. ADV, 2645 Maricopa St., Torrance CA 90503

FREE FedEx® on your first order, $3.00 future orders!*

*Free FedEx & $3.00 offer applies to orders up to 10lbs, contiguous U.S. only.

FEDERAL EXPRESS

CORPORATE LEASING BUSINESS

CREATIVE COMPUTERS MacMall YOUR MAC SUPERSTORE!™

Apple, the Apple logo, and Macintosh are registered trademarks of Apple Computer, Inc.

Offer Code: D462MG14

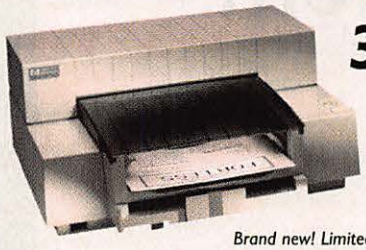
HEWLETT® PACKARD
AUTHORIZED RESELLER

CREATIVE COMPUTERS
MacMall™
YOUR MAC SUPERSTORE!™

ORDER TOLL FREE
800-222-2808
Call us for all your Apple Macintosh® Needs!

The HP DESKWRITER

SUPER BUY!



300 DPI InkJet Printer

- 35 Scalable Fonts
- Built-in print spooler
- Three-year limited warranty

Brand new! Limited Supply – Good while supplies last.

INCREDIBLE! $198
2075

HP DESKWRITER 520

NEW PRODUCT!

InkJet Printer

HP's most affordable high-quality printer



- Clear, sharp 600x300 dpi professional quality output – HP's exclusive Resolution Enhancement technology
- Grayscale printing for dramatic black graphics
- 35 TrueType scalable fonts
- AppleTalk and serial interfaces

$289
63820

HP DESKWRITER 560C

NEW PRODUCT!

3-YEAR LIMITED WARRANTY!

HP's affordable high-quality black and color printer for the Macintosh computer.



- Clear, sharp 600x300 dpi professional quality output HP's exclusive Resolution Enhancement technology
- Easy color printing with ColorSmart technology
- Prints up to 3 pages per minute in black, and an average of 4 minutes per page in color
- Resident black and color ink cartridges for convenient black and color printing without switching cartridges
- 35 TrueType scalable fonts
- AppleTalk and serial interfaces

$579
63821

HP LASERJET 4ML



- HP Resolution Enhancement technology and microfine toner produce the best 300dpi output available
- PostScript Level 2
- 35 Adobe scalable fonts
- RISC-based Intel 80960KA processor
- 4 MB RAM standard memory
- Macintosh and Windows PC compatible

$1029
61793

HP LASERJET 4MP



- True 600dpi resolution utilizing Resolution Enhancement technology and microfine toner
- PostScript Level 2
- 35 Adobe scalable fonts
- RISC-based Intel 80960KA
- 6 MB RAM standard memory
- Macintosh and Windows PC compatible

$1369
62758



HP SCANJET II SCANNERS

HP SCANJET IIp

300dpi, Greyscale Flatbed Scanner

Bonus: Includes FREE Calera WordScan OCR Software

GREAT BUY!

$479
60124

HP SCANJET IIcx

The high performance color/greyscale scanner that provides advanced features at a breakthrough price!

- Superior image quality with 1600 DPI enhanced resolution; 400 DPI optical resolution
- 24-Bit color allows you to recognizse and scan over 16 million colors
- HP AccuPage 2.0 for better text recognition
- Optional transparency adapter available
- Optional 50-page document feeder available
- One-year HP Express Exchange Warranty for 24-hour replacement service

NEW PRODUCT!

$949
62885

HP DESKWRITER 310

The new HP DeskWriter 310 printer, no-compromise printing for Apple Macintosh PowerBook® users.



- Crisp 300 dpi black print
- Optional color kit for amazing color output
- Fast – up to 3 pages per minute
- Compact and lightweight
- 35 scalable fonts built-in
- Background printing
- Optional rechargable battery

$309
62564

HP Fax 900 12 sec./pg.	$789.99	62567
DeskWriter 550C	$489.99	60746
DeskWriter C	$395.99	3310
DeskWriter black ink cartridge (high capacity)	$24.99	60123
DeskWriter color ink cartridge	$27.99	3344
EP-S Toner Cartridge	$84.99	51071
LaserJet 4 toner cartridge	$104.99	60834
LaserJet 4L/4ML toner cartridge	$59.99	61890
PostScript Software for HP	$189.99	61889
DeskWriter 310 sheet feeder	$69.99	60749
DeskWriter 310 color kit	$36.99	62565
DeskWriter 310 black ink cartridge	$17.99	63511

Offer Code: D462MG14

MacMall FAX Order Line: 310-222-5800
Order Status: 800-560-6800

LOWEST PRICES? YEAH!

*If you see a lower price advertised in this magazine, please call us and we'll do our very best to BEAT that advertised price!**

CREATIVE COMPUTERS MacMall
YOUR MAC SUPERSTORE!

ORDER TOLL FREE 800-222-2808
Call us for all your Apple Macintosh® Needs!

RASTEROPS
THE ART & SCIENCE OF COLOR™



RasterOps 20/20 20" Color Display
- .31mm super fine dot pitch
- Supports 640x480 to 1158x870 (8 presets)
- Anti-static/glare coating
- Digital user controls
- 3-Year Limited Warranty

$1549.99 — 61777



RasterOps 2075RO 20" Trinitron
- .31mm super fine dot pitch
- Supports 640x480 to 1280x1024
- Trinitron tube
- Automatic degaussing
- Microprocessor controlled user-definable settings

$1959.99 — 60848

This 20" Monitor has multiscan/multiple resolution capability bringing you the flexibility you need!

Sweet 16 Monitor	$939.99	55890
MoviePak	$529.99	62520
MoviePak2	$1529.99	62317
MoviePak2 Pro Suite	$3399.99	63450
MoviePak Presentor	$1249.99	62762
DuoMate 8	$269.99	64593
DuoMate 16sc w/Farallon PowerPath	$539.99	62142
Horizon 24	$2258.99	64589
Horizon 24 w/DSPro	$2949.99	64202

Super CD-ROM Buy!!



$99 — 64348

- Single speed drive; NEC mechanism
- Caddy-less, all-in-one design
- Includes FREE FWB CD-ROM Toolkit
- Comes with Cable and SCSI Terminator
- FREE CD•ACCESS
- Brand New with One Year Warranty

MacMall CD-ROM Drive



$289 — 64089

- Double spin speed • FREE CD•ACCESS
- Photo CD (Multisession) Compatible
- Includes FREE FWB CD-ROM Toolkit
- Includes SCSI system cable, external terminator extra

Save up to $500 on CD-ROMs...

Purchase any CD-ROM drive from MacMall and you can purchase any of these great CD-ROM BUNDLES shown, for as low as '74"! Bundles are only available with CD-ROM drive purchase, ordered at the same time.

ENCYCLOPEDIA BUNDLE
INCLUDES THESE GREAT TITLES:



- Groliers Multimedia Encyclopedia CD
- Animals CD
- US Atlas CD
- World Atlas CD

$97.99 — 63310

HOME BUNDLE
INCLUDES THESE GREAT TITLES:



- Family Doctor CD
- Complete Shakespeare
- Audubon Birds CD
- Audubon Mammals

$86.99 — 63311

REFERENCE BUNDLE
INCLUDES THESE GREAT TITLES:



- Guinness Book of World Records CD
- Mayo Clinic CD
- Color It! CD
- Capitol Hill CD

$86.99 — 63971

ENTERTAINMENT BUNDLE
INCLUDES THESE GREAT TITLES:



- Indiana Jones CD
- Secret of Monkey Island CD
- Secret of Monkey Island 2
- Space Shuttle

$74.99 — 63713

FREE CD!
Get up to $200 worth of FREE software included on this disk. Plus interactive previews of over 100 software programs. *FREE WITH ANY ORDER!*



63090

POWERBOOK CASES FROM TARGUS
A TRADITION OF EXCELLENCE



For a high quality, low cost case for your PowerBook consider the Targus **NotePac** with a padded computer section 14x11x2.5" and external 13x9x2 accessory pocket. Detachable shoulder strap and interior portfolio section. Model CN01.

61186	Grey
61184	Purple
60696	Black
61185	Teal
61187	Blue

$34.99

Targus Leather Notebook Case
Full grain leather case is designed to carry a PowerBook and related accessories. Padded computer section is 15x11x2.5" plus an external 13x9x2" accessory pocket. Model CLN1.



$94.99 — 61927



Universal Note Case
Designed to carry PowerBook and personal printer in two separate compartments. 11x13x2.5", plus an expanding section for your work papers. The ideal case for the mobile office! Model CUN1.

$67.99 — 60090

RASTEROPS®
THE ART & SCIENCE OF COLOR™

ClearVue 17
Multiple-resolution support and brilliant color at an unbelievable price!
- .26mm dot pitch
- 75MHz screen refresh rate
- Supports 640 x 480 to 1024 x 768 pixels



17" COLOR DISPLAY

$899.99 — 64588

RASTEROPS PRODUCTS HAVE A 3-YEAR WARRANTY!



PaintBoard Lightning
New super fast 24-bit graphic display adapter for NuBus compatible Macintosh models gives you brilliant colors by the millions. Up to 2900% faster than built-in video. Supports up to 1024x768 resolution which makes it ideal for imaging, color publishing and business uses. Works with RasterOps 20/20 monitor and many 17" and 20" displays.

$769.99 — 63453

PaintBoard Professional	$1798.99	64592
PaintBoard Professional with DSPro DaughterCard	$2449.99	64590
PaintBoard 8Li	$324.99	63553
PaintBoard TurboXL	$1128.99	62539
DSPro DaughterCard	$949.99	64591
24XLTV	$2649.99	50287
24STV (7")	$749.99	63324

GLOBAL VILLAGE COMMUNICATION



THE NEW POWERPORT SERIES
offers unsurpassed fax/modem reliability and high speed. Communicate at 19,200 bps, and even faster speeds using v.42bis compression. And with FAX speeds of 14,400 bps your communications are faster than ever before. Includes GlobalFax OCR software to convert received faxes into editable files. Also includes: ZTerm, GlobalFax and America Online software FREE!

PowerPort Mercury for PowerBooks	$334.99	63062
TelePort Mercury for Desktop Macs	$334.99	63061
PowerPort Gold for PowerBooks with 14.4 bps send and receive data/FAX	$289.99	60467
TelePort Gold for desktop Macs with 14.4 bps send and receive data/FAX	$289.99	60661
PowerPort Silver for PowerBooks with 9,600 bps send and receive data/FAX	$264.99	60466
TelePort Bronzell for Desktop Macs with 2,400 bps data and 9,600 bps FAX	$96.99	61920

Send mail orders to: MacMall Order Dept., 2645 Maricopa St., Torrance, CA 90503-5144

MacMall FAX Order Line: 310-222-5800
Offer Code: D462MG14 Order Status: 800-560-6800

We do it very fast!

*With our sophisticated order entry, computerized warehouse and Fedex® shipping system we get your order on its way the same day, so you can enjoy your purchase tomorrow!**

CREATIVE COMPUTERS
MacMall
YOUR MAC SUPERSTORE!™

ORDER TOLL FREE
800-222-2808
Call us for all your Apple Macintosh® Needs!

VividQuest™
The Best in Removable Media



Removable hard drives, including the brand new 270MB 3.5" drive that reads and writes 105MB or 270MB cartridges, or the new 200MB 5.25" drive that will read and write 44MB, 88MB or 200MB cartridges. SyQuest is the industry standard format for removable hard drive storage devices.

SyQuest Drives

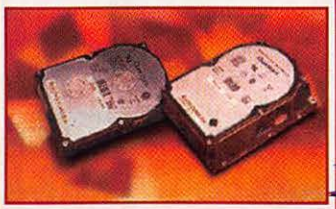
SyQuest 270MB External	$589	64243
SyQuest 200MB External	$629	64416
VividQuest 105MB External	$389	61945
SyQuest 88C (R/W 44) External	$469	61944

Genuine SyQuest Cartridges
Lowest pricing on high quality removable cartridges for any compatible SyQuest® drive mechanism.

270MB	$89.99	64415
200MB	$119.99	64417
105MB	$64.99	61241
88MB	$98.99	3304
44MB	$64.99	1906



Quantum



Highest quality internal and external hard drives

All Hard Drives include "FWB" Hard Drive Software



2.5" for PowerBook

127MB 17ms Int.	$264	63593	Ext.	$344 64028
170MB 17ms Int.	$289	63594	Ext.	$369 64030
256MB 17ms Int.	$369	64039	Ext.	$449 64040

3.5" Low Profile

170MB 17ms Int.	$189	4356	Ext.	$269 64035
270MB 11ms Int.	$299	63196	Ext.	$379 64031
340MB 11ms Int.	$319	5637	Ext.	$399 64032
540MB 10ms Int.	$489	63194	Ext.	$569 64033
1088MB 11ms Int.	$819	5508	Ext.	$899 64038

3.5" Half-height Drives

1225MB 10ms Int.	$979	61331	Ext.	$1059 64036
1800MB 10ms Int.	$1079	5509	Ext.	$1159 64037

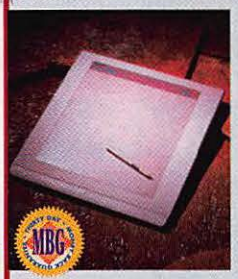
Installation of internal drives into your machine available for $30. Inquire for more information

Farallon
PhoneNET®
BUY TWO GET ONE FREE!



Single: $22.99 50726
3-Pack: $45.98 64156

WACOM



UD-1212R
Drawing Tablet

New 12" x 12" tablet is the perfect fit for any computer artist! New features include a full menu strip, 120 levels of pressure, a transparent overlay surface, a fully customizable cordless batteryless pen, and a more powerful interactive interface!

Perfect for image editing and illustration!

$529 62484

ArtZ
6x8" Tablet



World's first high-speed ADB compatible graphics tablet. The batteryless, cordless pressure-stylus has 120 levels of sensitivity. Programmable side switch for Undo, macros or other commands. 6" x 8" work area. Plugs into ADB port.

$319 60962

SUPERMAC. E-MACHINES

E-Machines E20
DUAL MODE COLOR MONITOR



The E20's 20-inch format allows a full page to be viewed in 1024 x 768 resolution exactly as it will appear when printed. Switching resolution to 1152 x 870, entire two-page layout can be viewed just as easily.

Limited Supply

$999.99 64386

SuperMac 17•T



- 17" Multimode color monitor
- .26 mm dot pitch
- Extended-range brightness control

$1069.99 60756

SuperMac Thunder/24

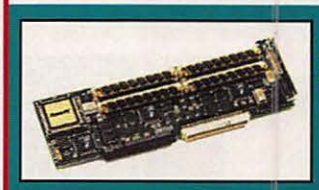


24-Bit color video card with 4,200% acceleration in QuickDraw performance and resolutions up to 1152 x 870 supported.

$1679.99 55442

E-Machines T-16II	$1169.99	60484
Thunder II GX 1152	$2069.99	64387
Spectrum Power 1152	$1159.99	63888

DAYSTAR DIGITAL



Transform your Mac into a PowerPC with Daystar's PowerPro 601 Upgrade!

- Genuine Apple PowerPC ROMs
- Simple plug-and-play operation
- Works with your current memory
- 1MB secondary cache
- Add up to 128MB of optional memory

66 MHz PowerPro 601	80 MHz PowerPro 601
$1596.99 64213	$2089.99 64215

FastCache PowerPro - 1MB Cache $539.99 64215

Turbo 040 Accelerators

Turbo 040 (with FPU support)

33 MHz Turbo 040 w/128 cache	$829.99	64655
40 MHz Turbo 040 w/128 cache	$989.99	64578
FastCache Turbo	$174.99	60926

Turbo 040 (without FPU support)

33 MHz Turbo 040i w/128 cache	$639.99	64654

CREATIVE COMPUTERS
MacMall
YOUR MAC SUPERSTORE!™

Offer Code: **D462MG14**

MacMall FAX Order Line: 310-222-5800
Order Status: 800-560-6800

WIDE Selection

MacMall has it all!

If you're looking for a Macintosh peripheral or accessory and don't see it then give us a CALL! We do our best to carry just about everything!

CREATIVE COMPUTERS

MacMall

YOUR MAC SUPERSTORE!™

ORDER TOLL FREE 800-222-2808

Call us for all your Apple Macintosh® Needs!

SHARP



Sharp JX-9460PS
600dpi PostScript Laser Printer

- 27 PCL5 typefaces
- Virtually silent with "sleep mode" and cuts your electric bill!
- True 600x600dpi quality printing
- Fast 6 page-per-minute printing with RISC processor
- 250-sheet paper tray
- Standard 2MB RAM, expandable to 9MB (3MB required to auto switch between HP PCL5, Epson FX, IBM Proprinter or PostScript) – works with Macs and PCs
- 35 built-in PostScript fonts

$999 64244

Sharp JX-325
24-bit 600dpi one-pass color flatbed scanner



- Fast, precise scans with outstanding 300/600 dpi quality
- 24-bit color, 256 shades of grey or black-and-white scanning
- Superior color and clarity with Sharp's one-pass scanning system
- 300dpi optical resolution (600dpi interpolated)
- Maximum scan area is 8.5x11"
- Zooming enhances mapping to a certain size
- Adjustable white balance with edge emphasis allows sharpening
- Widely used SCSI-2 interface

$629 64245

The Home Store

Brøderbund

Mario Teaches Typing $29	62075
Prince of Persia II $31	NEW!
Print Shop Deluxe $49	62391

Electronic Arts

C. Yeagers Air Combat ... $39	62372
PGA Tour Golf $38	55239

Interplay

Bridge Deluxe w/Sharif ... $34	62545

Maxis

SimCity 2000 ..... $41.95	62818

MediaMate

3.5" FlexPack 5 ..... $7	63509
3.5" FlexPack 10 ..... $9	63508
Copy Clip $7	63507
3.5" Disk Travel Color Pk . $9	63506
Multimedia StoreFIle $9	63505
Fastrac Compact $5	63496

Microsoft

Flight Simulator 4.0 .. $44.99	55421

Software Toolworks

Mavis Beacon Typing $29.95	62075
Chessmaster 3000 $29.95	60822

Four-year extended warranty from GE Service Protection Plus available on all hardware products! Ask a MacMall Representative for full details!

Newer™ TECHNOLOGY

PowerBook Duo MicroDocks



Ultra-small and low cost, Newer's 3 MicroDock™ models provide connectivity and portability for Duo Users.

SCSI MicroDock™, the first portable SCSI solution, provides SCSI and ADB ports. Exclusive features include active termination for low power consumption and more reliable connection to hard drives and other Macintosh computers. Get SCSI-mode and SCSI Disk mode operation with any PowerBook SCSI cable.

$139.99 62324

Color MicroDock™, the first low-cost portable color solution, supports VGA, SVGA, and Apple's 12- to 16-inch color monitors in 256 colors (8-Bit) and 19- and 20-inch monitors in 16 colors (4-Bit). Audio out and ADB ports included. NTSC adapter available.

$267.99 62323

Ethernet MicroDock, the first portable Ethernet solution, provides easy RJ45 10BaseT Ethernet network connection. Included software monitors hardware in the background for network errors. Full SNMP support. Promiscuous mode. Comes with a standard ten-foot 10BaseT cable.

$163.99 NEW

Quadra Cache™ The Slot-Free Cache Solution

SLOTS

Add 128K of high-speed "slotless" cache to Quadra 605, 610, 650, 700, 800, 900, 950 and Centris 610 and 650 Macintosh computers. Quadra Cache™ allows users to enjoy improved performance while leaving the PDS and NuBus slots open for other high-speed upgrades. Fits in the existing CPU socket. boosts your Macintosh computer's performance by up to 40%! Comes with a 2-Year Warranty.

$254.99 NEW

RAYDREAM

RayDream Designer 3.0

"By far the best modeling and rendering value around..."
-MacWorld, August 1993



Try the leading 3D illustration package. It handles the details - lighting, shadows, transparency, reflections and perspective are automatic! Actually paint the most complex object in 3D!

$244.99 62350

addDepth

"addDepth is the way to go!"
-MacUser, June 1993



Type, draw, and print in 3D with this award-winning application! Use built-in text and drawing tools to type and draw directly in 3D. Or import popular clip art and graphics. Add depth and perspective automatically, then personalize with colors, textures, bevels and lighting. Export your files in Illustrator, FreeHand, PICT or EPS format. A must-have for both business graphic users and creative professionals.

$122.99 60951

JAG II

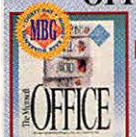
"☆☆☆☆" -Publish



This award-winning graphics utility is packed with new features. Resolution boosting eliminates the jaggies in your images or animations, especially scans and bitmaps, with a single mouse click. Supports PICT, TIFF, EPS, PhotoCD, QuickTime and more.

$88.99 62145

Microsoft OFFICE



PLUS: FREE TrueType MasterSet

These best-selling programs in one integrated super package!

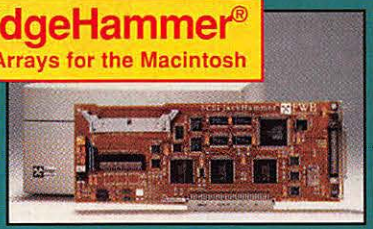
- Microsoft Word 5.1
- Microsoft PowerPoint 3.0
- Microsoft Excel 4.0, and
- Microsoft Mail
- Free TrueType Master Set

NOW INCLUDES FREE UPGRADE TO POWER-PC VERSION!!!

$473.99 MS TrueType valid while supply lasts 60968

FWB incorporated

SledgeHammer®
Disk Arrays for the Macintosh



SledgeHammer® Arrays match a pair of high performance Fast or Fast & Wide SCSI drives:

- Designed for digital video, multimedia, publishing and prepress
- Sustained transfer rates up to 13.5MB/sec
- Includes RAID ToolKit Software & SCSI JackHammer® with NuBus, Wide, and II models
- Macintosh with PowerPC compatible today

SledgeHammer2000FMF	Nubus 4.7MB/Sec	$2829	64190
SledgeHammer4200FMF	Nubus 5.4MB/Sec	$5099	64091
SledgeHammer4100FMF	Nubus 5.0MB/Sec	$5599	64738
HammerDAT 16GB		$1599.99	64096
SCSI Jack Hammer		$639.99	60722
Pocket Hammer 1000FMF Ext. 1GB		$1299.99	64093
Pocket Hammer 2100FMF Ext. 2.1GB		$2699.99	64094
HammerDisk 1300FMF 1.3GB Optical		$3399.99	64095

Performance Storage Peripherals

CREATIVE COMPUTERS MacMall YOUR MAC SUPERSTORE!™

Send mail orders to: MacMall Order Dept., 2645 Maricopa St., Torrance, CA 90503-5144

MacMall FAX Order Line: 310-222-5800

Offer Code: D462MG14 *Order Status: 800-560-6800*

FREE FEDERAL EXPRESS

*On your first order with MacMall!**
$3.00 shipping on future orders!

And No Credit Card Surcharges!

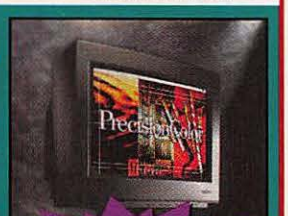
CREATIVE COMPUTERS
MacMall
YOUR MAC SUPERSTORE!™

ORDER TOLL FREE
800-222-2808

Call us for all your Apple Macintosh® Needs!

radius™
AUTHORIZED RESELLER

Precision Color 17T



New 17" color monitor with "on-the-fly" resolution switching from 640x480 to 1152x870. Digital controls for precise settings and super sharp .25mm dot pitch give you quality you can see! Ask about the Radius worry-free service warranty!

$989* 63587

***AFTER $100 MAIL-IN REBATE**
Rebate ends Sept. 30th, 1994

IntelliColor Display/20

The Intelligent 20" Color Display for Macintosh Computers



- Vertically flat 20" Trinitron
- Resolution up to 1600 x 1200
- User-selectable color temperature
- Exclusive Worry-Free Warranty

$1897 61362

PrecisionColor / 17	$1199.99	63587
PrecisionColor Display 20/V	$1749.99	NEW
PrecisionColor / 21	$2149.99	NEW
PrecisionColor Pivot	$869.99	60914
Radius Pivot Display	$629.99	55130
Radius Full Page Display/gs	$529.99	63785
Radius TPD 20gs (2-page display)	$869.99	62470
Radius TPD 21gs (2-page display)	$999.99	62887

radius
VideoVision Studio
The Professional Macintosh Digital Video System



With VideoVision Studio you can record full-screen, full motion, 60-field per second, digital video input and output to and from your hard disk. It digitizes stereo audio simultaneously and stores it with the video for easier editing.

$3649 61326

Save $500!
When you trade up to VideoVision Studio from a qualifying competitor's board (from SuperMac, Sigma, RasterOps or New Video) through Sept. 30, 1994. Simply purchase the VideoVision Studio, send claim form, registration card, sales receipt and board being traded and you'll get a check for $500 direct from Radius. Ask your phone representative for more information and which boards qualify.

VideoVision Studio Upgrade from VideoVision	$1629*	61785
VideoVision Basic	$1629*	62146
VideoVision w/Adobe Premiere & MacroMediaAction	$1979*	61327



Radius LeMans GT Display Adapter
plus FREE NEC CD-ROM DRIVE!!

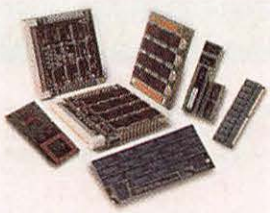
The world's fastest 24-bit display interface for Macintosh, delivering resolutions to 1152x882 with ultra fast 32-bit QuickDraw acceleration. With 3MB of VRAM, and optimized ASICs, it performs up to 230% faster than built-in video of Quadra!

$1999 63788

BONUS! Direct from Radius NEC 3xe CD-ROM Drive (valid thru 8/93)

Radius 24xp-Pro Display Adapter	$499.99	62326
PrecisionColor Pro 24x Accelerator	$1469.99	61769
BONUS: FREE NEC 3XE CD-ROM DRIVE DIRECT FROM RADIUS**		
PrecisionColor Pro 24x (7")	$899.99	61695
PrecisionColor Pro 24xk Adapter	$759.99	63786
Radius PhotoBooster	$809.99	62325

**Offer good through 8/31/94. *Pro 24xk price after $50 Radius mail-in rebate. †24x price after $75 Radius mail-in rebate. Rebates expires 8/31/94.



Call MacMall for Memory!

For the lowest prices on memory products for your desktop Macintosh or PowerBook, call us FIRST!

8-Bit 80ns SIMMs (30 pin)		
1x8 80ns	$44	2224
2x8 80ns	$75	60274
4x8 80ns	$155	2239
32-bit SIMMs (72 pin) LC III, Performa, Centris, Quadra, Power Mac		
4 MB 80ns	$149	4468
8 MB 80ns	$309	4177
16 MB 70ns	$678	61271
32-Bit SIMMs (72 pin) Quadra, Power Mac		
4 MB 60ns	$169	61203
8 MB 60ns	$329	61205
16 MB non-composite	$749	62424
32 MB non composite	$1,449	62425
PowerBook 140, 145, 170		
4 MB	$199	61751
6 MB	$269	55471
PowerBook 160, 165, 180		
4 MB	$179	60773
6 MB	$279	60774
8 MB	$379	60775
10 MB	$439	60776
PowerBook 165c, 180c		
4 MB	$199	61383
6 MB	$299	61384
8 MB	$385	61385
10 MB	$479	61386
Duo (all models)		
4 MB	$195	61619
8 MB	$359	61034
Mac Video		
256K VRAM	$22	55831
512K VRAM	$39	60488

Pricing on memory modules can fluctuate on a daily basis. Please call for the lowest prices.

*Free shipping and $3.00 offer applies to continental U.S. only; orders over 10 lbs incur extra charges. Ask phone representative for full details of offer.

CREATIVE COMPUTERS
MacMall
YOUR MAC SUPERSTORE!™

CLARIS ClarisImpact™

The all-in-one business graphics and presentation program that lets you create stunning business graphs, charts and diagrams, then incorporate them into text-based reports or a slide presentation. All in one program!



NEW! Native PowerMac Version $265 NEW!

Macintosh Version.... $265 63474

CLARIS MacDraw Pro 1.5

MacDraw Pro is an object-oriented drawing program that supports the full color and greyscale abilities of your Macintosh. Gives you the ability to draw with specialized tools including bezigon, polygon, and gradient fills.



$265 NEW!

Macintosh Version $265 60483
Super Upgrade from MacDraw or MacDraw II $97.99 64331

CLARIS ClarisWorks 2.1

In addition to its award-winning word processing, spreadsheet, charting, database, graphics, and communication capabilities, ClarisWorks 2.1 now offers dazzling new capabilities. You can have the powerful function of a complete outliner, presentation slid show with QuickTime movies, and color painting. 1MB of memory to run!



$195

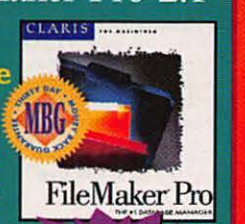
Native PowerPC Version 64337

Macintosh Version	$195	64216
ClarisWorks Version Upgrade	$74	64328
Competitive Trade-Up	$114	

CLARIS FileMaker Pro 2.1

The #1 Cross-platform DataBase

FileMaker Pro gives you database power without the programming. New version has over 50 new features. The perfect balance of function and accessibility.



$259

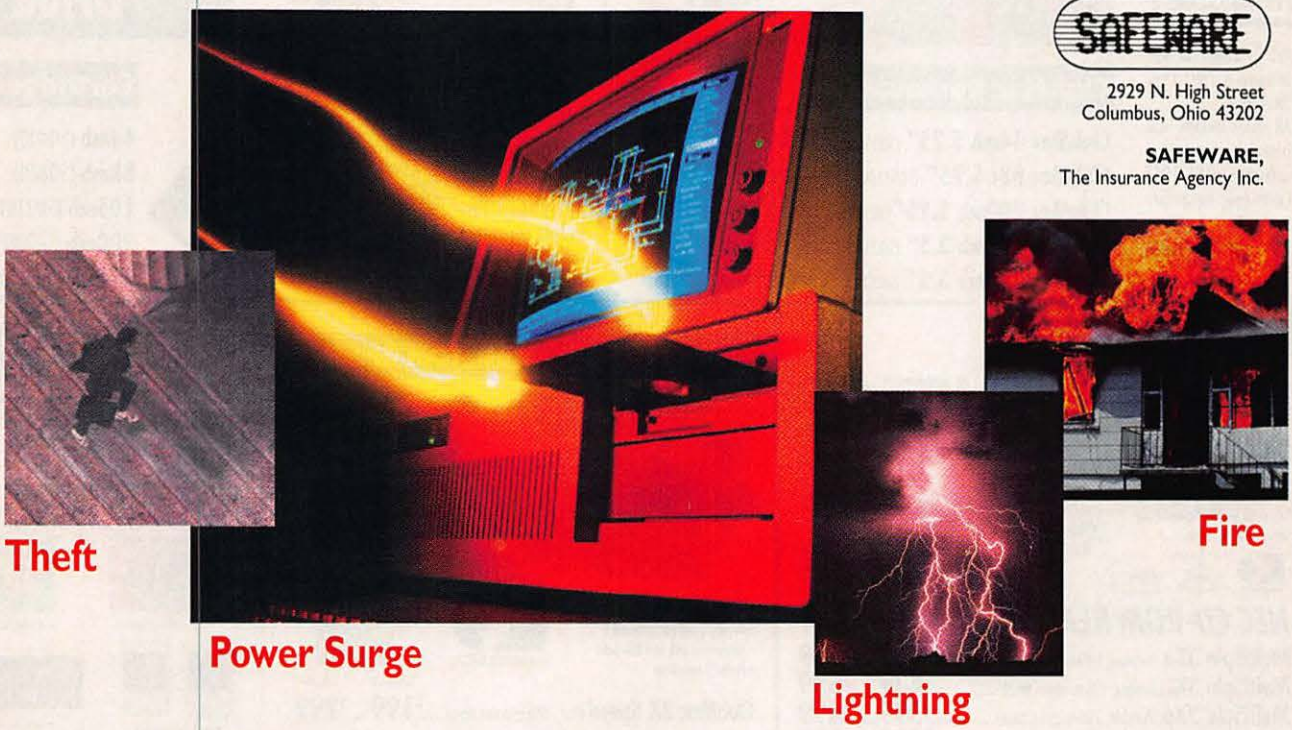
Macintosh Version	$259.99	62272
Version 2.1 Upgrade	$88.99	63622
Competitive Trade-Up	$117.99	64330

NEW

Offer Code: **D462MG14**

MacMall FAX Order Line: 310-222-5800
Order Status: 800-560-6800

System Security: insures your Apple®
Protects your system in the office, at home, and even on the road.



SAFEWARE

2929 N. High Street
Columbus, Ohio 43202

SAFEWARE,
The Insurance Agency Inc.

If you lost the use of your computer tomorrow, how would you manage? Unfortunately, it happened to about two and one-half million users last year. Their computers were stolen, destroyed by fire or natural disasters, accidentally dropped — even disabled by sudden power surges. Unforseen mishaps that no warranty covers. Fortunately, you can now insure your valuable APPLE equipment against external loss or damage, with *System Security* from Safeware®.

Comprehensive coverage.
Under the *System Security* policy, your system is insured against theft, fire, vandalism, water damage, power surges, lightning, accidental damage, earthquake, flood and windstorms. No matter whether your system is in transit, at the office or at home. What's more, the policy covers repair or replacement of your equipment without depreciation.†

You pay no deductible.
When your premium is accepted, your system is covered for one year. There is no deductible.

10-day free trial period.
You can try *System Security* for 10 days and if for any reason you're not completely satisfied, Safeware will refund your premium in full.

Why not begin your *System Security* coverage today? It's easy! Just phone the special Safeware toll-free number listed below to purchase a one year policy on any of the equipment listed here.

One year coverage for just pennies a day!

DESKTOPS	1-yr Premium
Power Macintosh Macintosh Quadra Macintosh Centris Printers & Monitors	
$100 to $1,000	$39
$1,001 to $2,000	$40
$2,001 to $3,000	$60
$3,001 to $4,000	$80
$4,001 to $5,000	$100

POWERBOOKS	1-yr Premium
Apple Macintosh PowerBooks	
$100 to $1,000	$39
$1,001 to $2,000	$64
$2,001 to $3,000	$96
$3,001 to $4,000	$128
$4,001 to $5,000	$160

NEWTON	1-yr Premium
Apple Newton	$52

For more information or to order System Security today, call:
1-800-800-6132
Insurance Sales Only.

For merchandise, call
1-800-222-2808

† This is a general summary of the provisions and qualifications of the insurance benefits included in the *System Security* Policy. Review the policy for complete details and disclosures. *System Security* SM is the service mark of Safeware. *System Security* is offered exclusively by Safeware and is underwritten by American Bankers Insurance Company, 11222 Quail Roost Dr., Miami, FL 33157.

† Available in the U.S. except HI. Pending approval in AR, CT, GA, IA, KS, LA, ME, MA, MI, MN, MO, MT, NE, NV, NM, NY, NC, OK, RI, TN, VT, WI.

1-800-258-2622 1-800-CLUBMAC 1-800-258-2622

Removable Hard Drives

FEATURING

SyQuest® REMOVABLE TECHNOLOGY

All SyQuest drives include a TWO Year Warranty.
All drives include SCSI Director formatting software, ONE FREE Cartridge, necessary cables for "plug-and-play" and documentation.



ClubMac Removables

	Internal	External
ClubMac 44mb 5.25" (SQ555)	$249	$289
ClubMac 88c 5.25" (SQ5110C)	$379	$419
ClubMac 200mb 5.25" (SQ5200)	$559	$599
ClubMac 105mb 3.5" (SQ3105)	$339	$379
ClubMac 270mb 3.5" (SQ3270)	$619	$659



ClubMac 200mb 5.25"

Introducing the NEW ClubMac 200mb 5.25" Removable Drive

ClubMac 30 DAY MONEY BACK GUARANTEE

All SyQuest cartridges cartridges include a FIVE Year Warranty.



Cartridges

44mb (SQ400)	$5
88mb (SQ800)	$8
105mb (SQ310)	$5
200mb (SQ2000)	$9
270mb (SQ327)	$8

CD-ROMS

MultiSpin 3Xp

The 3Xp combines 3X transfer rate performance, 250ms access time and a 256 KB continuous-flow cache in a compact design, making it and incredible value. At only 2.4 lbs the 3Xp is the world's lightest triple speed CD-ROM reader.

NEC



NEC CD-ROM READERS

	w/o bundle	w/bundle
MultiSpin 3Xe (External, 195ms access time)	$469	$569
MultiSpin 3Xi (Internal, 195ms access time)	$439	$539
MultiSpin 3Xp (Portable, 250ms access time)	$399	$499
MultiSpin 4X Pro (External, 180ms access time)	$935	$1035

ClubMac 2X Speed CD-ROM Reader

NO CADDY NEEDED!



- 320ms access time
- Double Speed performance
- Headphone jack and RCA jacks
- PhotoCD compliant

ClubMac 30 DAY MONEY BACK GUARANTEE

	w/o bundle	w/bundle
ClubMac 2X Speed (Ext., 320ms access time)	$199	$299

The ClubMac CD-ROM reader carries a ONE Year Warranty

CLUBMAC CD-ROM BUNDLE $800 VALUE



Hard Drives

Quantum

LPS 540MB



ClubMac 30 DAY MONEY BACK GUARANTEE

GO•DRIVE SERIES

2.5" POWERBOOK DRIVES

Capacity	Access	Internal	External
170mb	17ms	$259	$379
256mb	17ms	$339	$459

LPS & PRODRIVE SERIES

3.5" LOW PROFILE

Capacity	Access	Internal	External
170mb	14ms	$209	$269
270mb	11ms	$259	$319
340mb	11ms	$299	$359
540mb	10ms	$429	$489
540mb	9.5ms	$549	$609
1080mb	9.5ms	$799	$859

3.5" HALF HEIGHT

1800mb	10ms	$1079	$1139

Quantum Pro and LPS series carry a TWO Year Warranty. Go-Drives carry a ONE Year Warranty

ClubMac Tape Backup

Capacity	Model	Format	Media	Internal	External
2.0GIG	ClubMac DAT	DDS	60m, 90m	$749	$79
2-4GIG	ClubMac DAT/DC	DDS-DC	60m, 90m	$949	$99
4-8GIG	ClubMac DAT/2	DDS-2	60m, 90m, 120m	$1329	$137
2.0GIG	HP DAT	DDS	60m, 90m	$949	$99
2-4GIG	HP DAT/DC	DDS-DC	60m, 90m	$1109	$115
4-8GIG	HP DAT/2	DDS-2	60m, 90m, 120m	$1439	$148

ClubMac DAT and DAT/DC drives include Retrospect v2.0 Backup Software, ONE 90 Meter Tape and a TWO Year Warranty. HP DAT drives carry a ONE Year Warranty
The ClubMac DAT/2 & HP DAT/2 drive includes Retrospect Remote v2.0 (3-Pack) Network Backup Software, ONE 120 Meter Tape and a ONE Year Warranty

ClubMac Optical Drives



CLUBMAC 5.25" 650MB SHARP OPTICAL

	Access Time	Internal	External
ClubMac (M25IIA) 3.5" 128mb Fujitsu Optical	40ms	$839	$86
Fujitsu (M25IIA-DYNAMO) 3.5" 128mb Dynamo	40ms		$86
ClubMac (OMD-5010) 3.5" 128mb Epson Optical	40ms	$759	$78
ClubMac (JY-750) 5.25" 650mb Sharp Optical	40ms	$1669	$169
ClubMac (JY-800) 5.25" 1.3GIG Sharp Optical	40ms	$2469	$249
Tahiti III (9400) 5.25" 1.3GIG Optical	19ms		$274
ClubMac HP (C1716T) 5.25" 1.3GIG Optical External	28ms		$269

CLUBMAC 5.25" 1.3GIG SHARP OPTICAL

Our Award-Winning Sharp family just got bigger!!

All ClubMac Opticals include ONE cartridge and ONE Year Warranty.

Seagate

ClubMac 30 DAY MONEY BACK GUARANTEE

Seagate drives carry a ONE Year Warranty

Unformatted Capacity	Model	Description	Access Time	Actual MAC Capacity	Internal	External
3.5" LOW PROFILE						
1.2GIG	ST31200N		10ms	1000mb	$869	$929
3.5" HALF HEIGHT						
1.9GIG	ST11900N		9ms	1600mb	$1199	$1259
2.4GIG	ST12400N		9ms	2000mb	$1549	$1609
1.9GIG	ST11950N	*Barracuda 1*	8ms	1350mb	$1489	$1549
2.4GIG	ST12550N	*Barracuda 2*	8ms	2050mb	$1745	$1805
5.25" FULL HEIGHT						
3.4GIG	ST43400N	*Elite-3*	11ms	2750mb	$2159	$2259

CLUBMAC 20" TRINITRON MONITOR BLOWOUT

Monitors & Graphic Cards

radius



IntelliColor Display / 20
ClubMac Blowout Price is...
$1879

GRAPHIC CARDS
LeMansGT (0447) $1949
PrecisionColor Pro 24X (0429) $1349
PrecisionColor Pro 24XK (0430) $699*
PrecisionColor Pro 24XP (0431) $449
PrecisionColor 24X (0421) ..... $824†

MULTIMEDIA
VideoVision Studio (0418) $3389
VideoVision Studio Upgrade (0419) .$1499
VideoVision Studio Basic (0416) $1549

MONITORS
PrecisionColor/21 (0463) $2049
IntelliColor Display/20 (0381) $1879
PrecisionColor Display/20v (0427) .. $1679
PrecisionColor Display/17 (0460) $999**
PrecisionColor Pivot (0356) $649
Pivot Display (0356) $565
Full Page Display/gs (0424) $489
TPD20gs (0436)/21gs (0437) .. $799/$989

* After MFR $50.00 rebate, † After MFR $75.00 rebate
** After MFR $100.00 rebate. Offers expire 08/31/94

Purchase one of the following



$1349
PrecisionColor Pro 24X

or



$1949
LeMansGT
NEC MultiSpin 3Xe

Get a "FREE CD-ROM READER a $469 value



It's time to trade up for VideoVision Studio!
SAVE $500*

For a limited time, you can trade in your digital video board and get $500.00* from Radius when you purchase a VideoVision Studio video board.

*Offer good only with the purchase of a Radius VideoVision Studio. Mail qualifying video board, VideoVision Studio warranty registration card and a copy of your sales receipt to Radius. Offer ends 08/31/94

NEC

17" MultiSync 5FGp



$1099

MONITORS
15" MultiSync 3V (JC-1535VMA) up to 1024 x 768 ..... $469
15" MultiSync 4FGe (JC-1531VMA-3) up to 1024 x 768 ..... $629
17" MultiSync 5FGe (JC-1731VMA-3) up to 1024 x 768 ..... $989
17" MultiSync 5FGp (JC-1741UMA-3) up to 1280 x 1024 .... $1099
21" MultiSync 6FGp (JC-2141UMA-3) up to 1280 x 1024 .... $1999

NEC Monitors carry a THREE Year Warranty.

PRINTERS
Silentwriter 640 6ppm, 300 dpi, 52 fonts, PS Level 2 ..... $719
Silentwriter 1097 10ppm, 600 dpi, 35 fonts PS Level 2 ..... $1379

The Silentwriter 640 carries a Limited TWO-Year Overnight Replacement Warranty
The Silentwriter 1097 carries a ONE Year Warranty

Printers

HP LaserJet 4ML



$1029

- 35 PostScript fonts • 4ppm
- 4MB standard memory
- ONE Year Warranty
- Fast Intel 80960 18.8 MHz RISC processor
- 300-dpi

HEWLETT PACKARD
Authorized Dealer

HP DeskWriters carry a THREE Year Warranty.
HP DeskWriter 310s carry a ONE Year Warranty
HP LaserJets carry a ONE Year Warranty.

PRINTERS
HP DeskWriter 310 Optional Color Kit Available $299
HP DeskWriter 310 with Cutsheet Feeder (60-sheet), Color Kit Available $369
HP DeskWriter 520 600 x 300 dpi, 3ppm, 35 fonts, LocalTalk/Serial $299
HP DeskWriter 550C 300 x 300 dpi color, 3ppm, 35 fonts, LocalTalk/Serial ... $479
HP DeskWriter 560C 600 x 300 dpi color, 3ppm, 35 fonts, LocalTalk/Serial ... $579
HP LaserJet 4ML 300 x 300 dpi, 4ppm, 35 scalable fonts, Adobe PS Level 2 . $1029
HP LaserJet 4MP 600 x 600 dpi, 4ppm, 35 scalable fonts, Adobe PS Level 2 . $1395

Acceleration

POWERPC PRODUCTS
66 MHz PowerPro 601 (000728) $1499
80 MHz PowerPro 601 (000735) $1999
FastCache PowerPro-1MB Cache (000742) $499

TURBO 040 ACCELERATORS
Turbo 040 (with FPU support)
33 MHz Turbo 040 w/128K cache (000773) $799
40 MHz Turbo 040 w/128K cache (000797) $959
FastCache Turbo (000223) $165
Turbo 040i (w/o FPU support)
33 MHz Turbo 040i w/128K cache (000780) $629

DAYSTAR DIGITAL
100% Compatible
100% Tested
5 Year Warranty

APPLICATION ACCELERATORS
Image 040 (Quadra/Centris) (000414) $1549
Quad 040 w/128K cache (Quadra/Centris) (000056) $959

POWERCACHE
without FPU / with FPU
33 MHz PowerCache (P31UV-033) ... $275 / $359
50 MHz PowerCache (P31UV-050) ... $415 / $539
PowerCache Adapter* $99
* Not req'd for IIci, IIvi, IIvx, Performa 600

Networking

ASANTÉ

10THUB/12	10BT Hub w/12 10T, Thk & Thn ports	$465
10THUB/8	10BT Hub w/8 10T, Thn port	$229
Mini EN/SC	Thn/10BT SCSI Ether w/DT& PB cable	$297
Mini EN/SC10T	10T SCSI Ethernet w/DT & PB cable	$237
NETEXT-FN	AAUI Hub w/4 RJ45 ports	$179
FNTNA	10BT or Thin FriendlyNet Media Adapter	$65
MC+IIE64	Mac II & Perf 600, Thk/Thn, 64K	$139
MAC+IIET64	Mac II & Perf 600, Thk, 10BT, 64K	$139
MC3NB	Mac II & Perf 600, Thk/Thn/10BT, 64K	$189
AP1001	AsantéPrint, Thk/10BT or Thk/Thn	$329

SUPERMAC™

WE HAVE THEM IN STOCK!

When you purchase the following products...

$200 REBATE

SuperMatch 20TXL + **Thunder/24 v.2.0**



$1949 $1429

You also get Free DSP upgrade $599 value

Bundle:
$1949 SuperMatch 20TXL
+ $1429 Thunder/24
$3378
- $200 SUPERMAC REBATE
$3178
Offer ends 8/31/94

24-BIT GRAPHIC ACCELERATORS
Thunder/24 v.2.0 (G1130) $1429
Thunder II GX•1600 1600 x 1200 ..... $3349
Thunder II GX•1360 1360 x 1024 ..... $2689
Thunder II GX•1152 1152 x 870 ..... $2169
Spectrum Power • 1152 (G3430) $1169
Spectrum/24 Series V (G3930) $839

All SuperMac products carry the SuperCare Plus Warranty (Overnight replacement for ONE Year). SuperMac graphics and digital - video cards carry a FIVE Year Warranty.

LARGE SCREEN DISPLAYS
SuperMatch 21•TXL Trinitron (STD2102) $2199
SuperMatch 20•TXL Trinitron (STD9752-XL) ... $1949
SuperMatch 17XL (STD1701) $999
Platinum 21 Two-Page GS (STD9761) $999
PressView 21 Display System $3349

MULTIMEDIA SOLUTIONS
Digital Film (DV2050) $3199
Spigot II Tape (DV1530) $849
Video Spigot NuBus (DV1030) $369
Video Spigot LC (DV1050) $249

RASTEROPS® CORPORATION



$529
RasterOps DuoMate 16sc

MONITORS
20T MultiScan Trinitron (2075RO) $1929
20/20 Multimode Color (2020C) $1539
ClearVue Color 17 ..... $869

RasterOps products carry a Limited THREE Year Warranty

GRAPHIC CARDS
PaintBoard Lightning (2685) $779
PaintBoard Turbo XL (2695) $1119
Horizon 24 (2678) $2239

MULTIMEDIA
24STV (2536) $719
24XLTV (2548) $2598
MoviePak (2690) $519
MoviePak2 (2676) $1479
MoviePak2 Pro Suite (2692) $3359
Video Expander II (2826) $499

DUOMATES
DuoMate 16sc (2659) $529

Scanners

MICROTEK

ScanMaker IIsp



$799

ScanMaker IIg with Fractal Design Sketcher 1.0 ... $489
ScanMaker IIsp with Photoshop 2.5 LE $799
ScanMaker IIHR with Photoshop 2.5 ..... NEW

EPSON ES-800C ProMac

*FREE ASTOUND 1.0 & $50 Rebate with the purchase of an EPSON ES-800C
* Offer applies after Mail-in, MFR $50.00 Rebate
Offer Ends 7/31/94



$1199

ES-800C Pro-Mac
Up to 1600dpi, PhotoShop 2.5, ScanTastic, KAI's PowerTools $1199
ActionScanning-Mac $799
Up to 1200dpi, PhotoShop 2.5 LE & ScanTastic
Transparency Unit (B813021 ..... $749

Modems

SUPRA MODEMS

SupraFaxModem 14.4 LC $159
V.32bis, V.42bis w/FAXstf & Micro
SupraFaxModem 14.4 ..... $225
V.32bis, V.42bis w/FAXstf & Micro
SupraFaxModem PB 14.4 ..... $225
V.32bis, V.42 Int. for Powerbook
SupraFaxModem 28.8 V.Fast Class $319

GLOBAL VILLAGE MODEMS

GLOBAL VILLAGE COMMUNICATION

TELEPORT / POWERPORT
Mercury 19,200, V.32 Turbo $329
Gold 14,400 V.32 bis $279
Silver 9600, V.32 ..... $255
Bronze/Bronze II 2400, 4800, 9600 Fax $95

ONEWORLD FAX SERVER
OneWorld Fax Server 1 Line/AppleTalk $865
OneWorld Fax Server 2 Line/10BT $1299

Warranties: All items manufactured by ClubMac are returned to ClubMac for warranty repair. All other items carry manufacturer's warranty. **Money Back Guarantee:** All products manufactured by ClubMac carry a 30 day money back guarantee. ClubMac extends all other manufacturers' return policies to its customers. Non-ClubMac products carry 30 day money back guarantee when specified. **Returns:** Call for RMA number! Any product that is returned WITHOUT an RMA number will be refused. All product information and prices are subject to change without notice. Not responsible for typographical errors.

DISCOVER NOVUS VISA MasterCard American Express

No Surcharge!

60

ClubMac

1-800-258-2622

Info (714)768-8130 • Tech Support (714)768-1490
Fax (714)768-9354 • 7 Hammond, Irvine, CA 92718

MacWorld July 1994

1-800-258-2622 1-800-CLUBMAC 1-800-258-2622

Circle 96 on reader service card

We're not like the other

We go the extra

Macintosh™ Systems



Whether you need a system for high-end color publishing, professional pre-press applications, desktop design and production or simply business productivity – Express Direct can custom configure a Mac System that's right for your specific job and right for your budget.

And remember, all Macs aren't created equal! At Express Direct we do more than take orders and ship boxes. We install the memory, video card and system software. Then we test every System – so all you need to do is plug it in! And only Express Direct gives you Toll-Free Technical Support with every Mac!

$4,749

Power Macintosh 8100/80 with CD ROM Drive
16MB RAM, 500 MB HD, includes Ethernet & FPU.
*• Add SuperMac 20TX•L with Thunder /24, 24-bit video accelerator, Extended Keyboard & System 7.1. Complete System Price **$8899***

Power Macintosh™
PowerPC™ Talk to an expert.

$5699



newgen

*The new high-resolution, full tabloid bleed Newgen **Imager Plus 12** produces 1200 dpi, 12x19" camera-ready output. Also available is the 800 dpi, letter size **Newgen 880p**. $1849*

Newgen's superior engineered products bring high-resolution, "service-bureau-like printing" to the personal printer. Newgen's proprietary Image Enhancement Technology produces incredibly crisp output normally found in printers at twice the price. And patented Auto Recognition Technology allows all Newgen printers to be attached to multi-platform networks for maximum flexibility and compatibility.

b **Call**

a **$1699**



*SuperMac **Thunder** /24 (a), "the fastest 24-bit card" with free DSP & the award winning **20-TXL**, 20" Trinitron display (b)*

SUPERMAC™

For color publishing & pre-press, nobody delivers more power and performance than SuperMac. SuperMac's 24-bit graphic accelerators constantly sweep MacWorld magazine's top 3 ratings for the fastest cards on the market. SuperMac's large screen displays are tailored to the demands of the graphics professional.

$2979



*Get true RAID performance on any NuBus Mac with the potent combination of FWB's 2.0 GB **SledgeHammer 2000 FMF NuBus** and FWB's **SCSI JackHammer** accelerator card.*

FWB incorporated

FWB produces the industry's broadest range of affordable, high-performance disk array storage subsystems. Choose the solution that's best for you from the SledgeHammer family of disk arrays, which now includes the top performing SledgeHammer II and SledgeHammer Wide. No matter which Macintosh you have, you'll benefit from the unsurpassed professional performance of an FWB disk array. Power Macintosh compatible.

We stock a complete line of quality products from all of the above manufacturers & more.

1-800-765-0020

Express Hours (CST) M-F 8am-7pm, Sat 10am-2pm • 24hr Fax • Customer Service Hotline: **1-800-236-3059**

Get it Direct!

Apple, the Apple logo, Macintosh,Macintosh Quadra and Power Macintosh are trademarks of Apple Computer, Inc. Prices are subject to change without notice. A 2% surcharge applies to American Express purchases. All returned orders may be subject to a 15% restocking fee plus return shipping. Call for RMA before returning. Software, unless defective, cannot be returned after it has been opened. All warranties on Macintosh or Apple brand products sold by Express Direct will be honored by Express Direct or its authorized agents only. All other manufacturers' warranties still apply. * Extended Service Plans are optional and available for an additional cost. Call for complete details.

mail order companies.

mile for you.



We'll give it to you straight.

When it comes to product knowledge and understanding the needs of graphic professionals – **nobody even comes close to Express Direct**. Not the other mail-order companies, not the superstores, not even your local dealer.

When you call us - **you'll talk with an expert**. Someone who's done their homework, knows the product, knows what they're talking about. Not an order-taker, like you get with the other mail-order companies.

We carry only top-notch products from the industry's best manufacturers. No garbage. You demand quality and so do we. What's more, our strict criteria for selecting products means we always get the lowest price – directly from the manufacturer. So **nobody can give you a better value** than Express Direct.

But that's just the beginning. With customer service and technical support that's the best in the industry, we make it our business to take care of you. All this is just a free phone call away. So, call Express Direct today. **You're going to love working with us!**



a **$1049**

b **Call**

Performance and Value: FOCUS Enhancements razor-sharp ***Lapis 17t*** *(a) & the most affordable accelerated 24-bit color interface (b).*

FOCUS enhancements

FOCUS Enhancements' Lapis T17 is without a doubt the best value available today. Offering an unmatched combination of performance and price, this 17" Trinitron gives you sharp, brilliant color in 4 resolutions. Add the accelerated 24-bit color card, and you've got all the features and speed at half the price of all the comperable systems. Now you can have the performance you demand at a price you can afford.



$1199

The Umax ***UC1260*** *offers incredibly accurate 1200 dpi scanning in 1 to 24-bits of color. Shown with optional transparency adapter.*

UMAX

From affordable 24-bit color at under $900, to top-of-the-line, 1200 dpi performance, Umax offers a scanner for every need and budget. With Adobe Photoshop for image editing and manipulation and an optional transparency adapter for scanning slides and transparencies, Umax scanners bring professional power to the desktop!

800

• Unlimited toll-free technical support

FULL WARRANTY COVERAGE

• Full warranty coverage

AUTHORIZED

• Authorized service & sales

• Flexible payment & leasing terms for those who qualify

International Orders Shipped Daily
Fax: 312.549.6447 **Ph.:** 312.549.0030

express direct

1801 W. Larchmont Ave.
Chicago, IL 60613

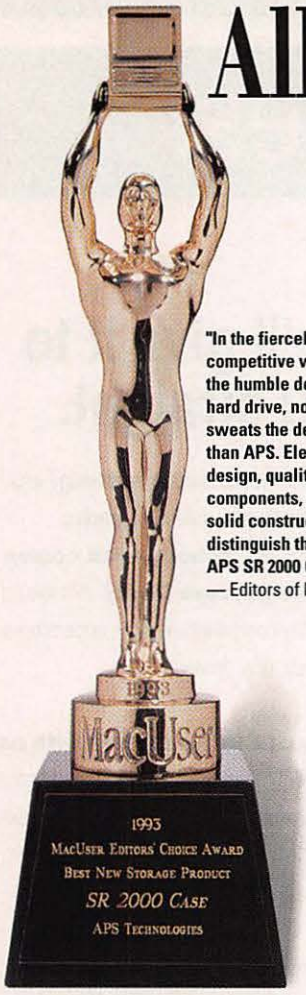
Circle 81 on reader service card

Best Technical Support

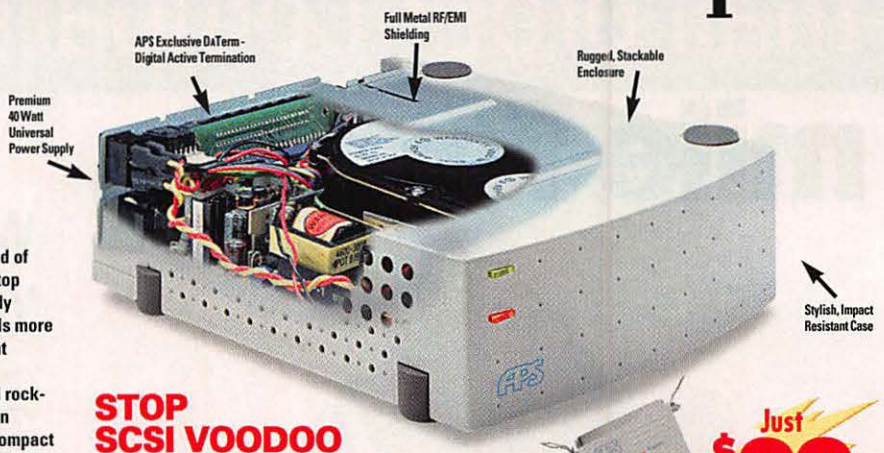
1994 Consultants Choice Awards
Macintosh Consultants Network

Great Products. Priceless Support!

All Drives Are Not Equal.



"In the fiercely competitive world of the humble desktop hard drive, nobody sweats the details more than APS. Elegant design, quality components, and rock-solid construction distinguish the compact APS SR 2000 Case."
— Editors of MacUser



STOP SCSI VOODOO

DATerm, APS' own patent-pending digital active termination technology helps you end SCSI Voodoo by eliminating SCSI line pulse fluctuation, as well as confusing signal and voltage reflections. Its unique impedance-matching characteristics provide superior signal-to-noise ratios, decreases SCSI retries, allows more reliable data transmission and improves SCSI chain stability. DATerm is available in the award-winning APS SR 2000 enclosure, as well as our new portable Companion II enclosure and SCSI Sentry.™

SR 2000 StacKIT™ $24

- End Cable Bondage Forever!
- Minimize SCSI Chain Length
- Heavy Metal Shielding Protects SCSI Signal
- StacKIT Includes Four Concave Stacking Feet
- StacKIT Includes Exclusive APS SCSI C "Connector"





SCSI Sentry™

Now you can "stop SCSI Voodoo" on your SCSI Chain, even when you're not ready to buy a new drive. Our new SCSI Sentry™ gives you all the benefits of APS' acclaimed DATerm technology in the form of an external SCSI performance monitoring instrument.

Benefits	SCSI Sentry
Optimizes Overall SCSI Performance	✓
Exclusive Digital Active Termination	✓
Provides Ideal Termination Power	✓
Drastically Reduces SCSI Retries	✓
Regulates SCSI Line Voltage	✓
Solves Bus Impedance Issues	✓
LED Activity Indicators Diagnostic Tool	✓
Easy Installation: Takes Seconds	✓

APS HARD DRIVES

For your Mac or Power Mac

Model	Capacity	Internal	SR2000
163MB - 1029MB			
APS Q 170[2] Quantum 170 LPS mechanism	163MB	199	289
APS Q 270[2] Quantum LPS270 mechanism	257MB	359	449
APS MX 290[2] Maxtor 7290 mechanism	276MB	299	389
APS MX 345[2] Maxtor 7345 mechanism	324MB	339	429
APS 340[2] 340 mechanism	327MB	429	519
APS Q 540[2] Quantum 540 mechanism	516MB	399	499
APS MS1.2AV[5] Micropolis 2210AV mechanism	965MB	949	1039
APS MS1.2[5] Micropolis 2210 mechanism	1001MB	899	989
APS MS4110[5] Micropolis 2210 mechanism	1002MB	889	979
APS Q 1080[2] Quantum 1080S mechanism	1029MB	749	849
1611MB - 2845MB			
APS ST 1.6[5] Seagate ST11950 Barracuda mech.	1611MB	$1499	$1589
APS MS 1.7AV[5] Micropolis 2217AV mechanism	1612MB	1279	1369
APS MS 1.7[5] Micropolis 2217S mechanism	1682MB	1199	1289
APS ST 2.0[5] Seagate ST 125500N Barracuda mech.	2040MB	1799	1889
APS MS 2.4G[5] Micropolis 1926 mechanism	2100MB	1499	*1599
APS MS 3.0G[5] Micropolis 1936 mechanism	2845MB	2149	*2249

Internal drives for Quadra 800 and Centris 610 available.
DaTerm patent pending
** Internal Price Listing*
Copyright © 1994 APS Technologies

1-5 Denotes length of manufacturer's warranty
** External Case is Special Full Height Only*

POWERBOOK DRIVES

Model	Capacity	LW Pro 630	Internal	Companion II AC/DC
APS PB 85[1]	80MB	$249	—	—
APS PB 170[1]	160MB	349	$299	$439
APS T 213[1]	202MB	349	299	439
APS PB 250[1]	240MB	449	399	539
APS T 340[1]	324MB	579	529	669
APS T 520[1]	500MB	949	899	1039

APS MX 290

The APS MX 290 provides great performance with transfer rates of 1.8MB per second, access speeds of 24 ms and seek times as low 13.1 ms. This 276MB drive is a terrific upgrade for any Mac.



PORTABLE STORAGE

The Perfect Home for your 2.5" PowerBook Drive.

Companion II Enclosures	AC	AC/DC
Enclosure	$89	$139



APS Technologies
6131 Deramus
Kansas City, MO 64120

APS Technologies

(800) 874-1428

MACWORLD MW SERVICE HERO

Get the Best: APS DAT

All APS Drives Are Power PC Mac Compatible! YES!

LEGENDARY PRODUCT SUPPORT APS TECHNOLOGIES

Only APS DATs bring you all the benefits of our SR 2000 enclosure with DATerm, Digital Active Termination

APS DAT $799

APS DAT

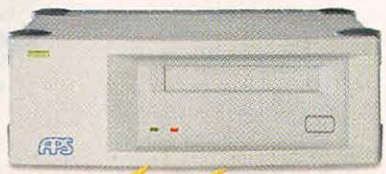
The amazing APS DAT offers you great performance and reliability. Get up to 2.0GB on a 90 meter tape with backup speeds as high as 10MB per minute.

All DATs Include Retrospect, a $139 Value, Free!



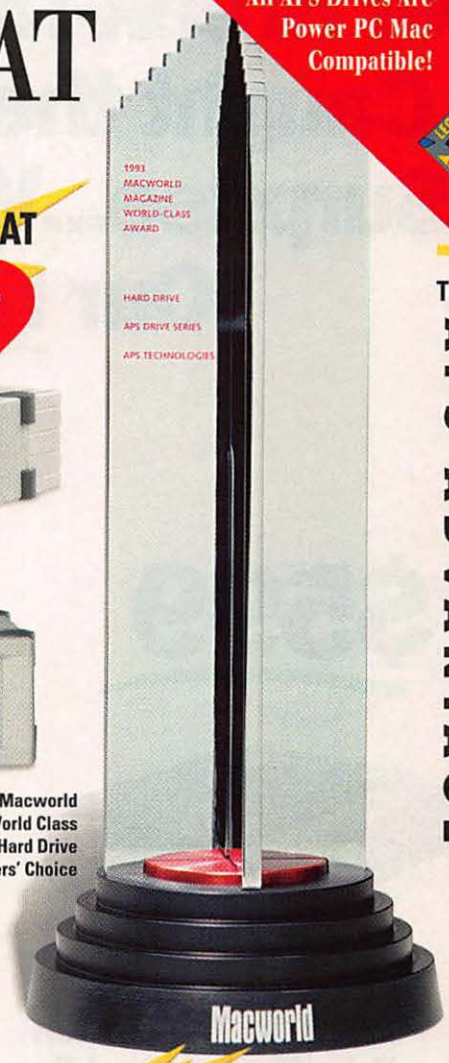
APS HyperDAT Speed

If you need high-speed backup (not the kind that ties your server up and slows down your network), you need the DDS-2 power of the APS HyperDAT! Back up locally at rates as high as 28MB per minute! Pack up to 10GB on a single tape! Best of all, your regular DDS and DDS compression tapes can be read in the APS HyperDAT, too!



APS HyperDAT™ $1399

1993 Macworld Magazine World Class Award - APS Hard Drive Series Readers' Choice



THE APS ADVANTAGE

- 30-Day MBG
- Toll-Free Support
- Awesome Warranties
- Factory Direct Quality
- Rapid Repair Return
- 24-Hour Product InfoFax

DAT

Model	Capacity*	Internal	SR 2000
APS DAT[2]	1.8-2G on 90m tape	$749	$799
APS Turbo DAT[2]	4-5G on 90m tape	1149	1199
APS HyperDAT[1]	8-10G on 120m tape	1349	1399

**Actual data compression and tape capacity vary greatly depending on the type of data recorded, other system parameters and environment.*

60 meter DAT Tape – $12, 10 Pack – $110
90 meter DAT Tape – $16, 10 Pack– $130
120 meter DAT Tape – $35, 10 Pack– $300
All APS DAT Drives Include Retrospect by Dantz & 1 FREE DAT Tape



CD ROM

Model	SR 2000
APS T 4101[1]	$299
APS T 3401[1]	499

APS stocks hundreds of CD titles; call our InfoFax today for a document directory at (800) 374-5802.

MAGNETO OPTICAL

Model	Internal*	SR 2000
APS 128MB MO[1]	$769	$799

Mechanism is Epson Magneto-Optical OMD-5010

All MO Drives Include 1 FREE Cartridge
128 MO cartridge — $49 unformatted, $55 formatted

APS 44MB SQ 555 $269



POWERBOOK STUFF

APS SCSI DOC w/ PowerMerge Lite $39



Palm-Sized 25–30 PowerBook SCSI Adapter that includes a docking adapter for PowerBook and termination power indicator. Receive Power-Merge Lite Free with every APS SCSI DOC!

APS SCSI BOY $19

Rugged Palm-Sized 25–30 PowerBook SCSI Adapters

APS PowerBalls $9.99ea

Brighten up that dull granite with a colorful APS PowerBall. Manufactured to the same exacting specifications as the Apple original, the APS PowerBall lets you customize your PowerBook® environment.



APS SyQuest



SYQUEST

APS SQ 555[2]	44MB	$269
APS SQ 5110c[2]	44/88MB†	459
APS SQ 3105[1]	105MB	399
APS SQ 3270[1]	270MB	659

† Does not format 44MB cartridges
44MB cartridges — $59 unformatted, $70 formatted
88MB cartridges — $100 unformatted, $105 formatted
105MB cartridges — $59 unformatted, $64 formatted
270MB cartridges — $95 unformatted, $100 formatted
All SyQuest Drives Include 1 FREE Cartridge

APS INTERNATIONAL
Global Storage Resource
APS Intl. Sales Line (816) 920-4109
On parle français au (816) 920-4135
Se habla español en (816) 920-4136
Si parla l'italiano in (816) 920-4137
Wir sprechen Deutsch (816) 920-4138
どうぞご遠慮なく日本語の
ファックスでもお申込み下さい。
24-Hour Intl. Fax: (816) 483-3077

International Sales

M–F 6AM–12Midnight CST. SAT & SUN 9AM–9PM CST.
For a Free Catalog, call APS Sales: (800) 874-1428, InfoFax: (800) 374-5802

- 30-day money-back guarantee • (Excluding opened software). Your risk is the cost of shipping.
- Drive-for-Drive Repair or Replacement Warranty • The warranty length is denoted by the superscripted number next to each drive model. APS will, at its discretion, replace or repair products found to be defective according to the terms of the product's warranty.
- All prices and specifications are subject to change without notice.
- Refused orders subject to restocking fee.
- Hard drives include brackets, cables, tools and LEDs required for operation with the specified Macintosh - where applicable. All hard drives from APS Technologies come preformatted with Apple's System 7.0.1 software, at least 9 MB of compacted publicly-distributable software, and APS Technologies' APS POWER TOOLS. SCSI formatter/hard disk partitioner.
- All external drive products and cases come with a premium 25 x 50 SCSI cable. Companion II drives, (not cases) include a 30 x 50 PowerBook SCSI cable.
- International customers must pay for all shipping charges.
- Toll-free technical support as needed. Regular hours are 9 am to 8 pm Monday thru Friday, 9 am to 5 pm Saturday, Central Time.

Same day shipping for personal checks (Restrictions apply)

Visa, Master Card, Discover, American Express: No Surcharge.

(800) 874-1428

APS Technologies

Great Products. Priceless Support!

Circle 62 on reader service card

Our Break-Through Technology Caught the Competition by Surprise...Wait 'Til They See Our New Prices!

$599



Avec Colour 2400

- **2400 dpi Resolution**
- **Free Photoshop LE**

$1299



Now with more DPI!

New Relisys RELI 2412T

- **2400 dpi Resolution***
- **Free Transparency Unit**
- **Free Full Photoshop**
- **Free OmniPage OCR**

* Increased hardware resolution now delivers true 1200x300 dpi scanning and enhanced resolution to 2400 dpi!

30 DAY Special Offer

Now you can have all the features without the high cost.

Before now, buying a quality scanner meant spending a fortune. Relisys' new Cold Scan Technology changes everything. Finally, a family of **full-featured scanners** at prices you can afford!

Dust-Free, Cold Scan Technology. Ordinary hot-lamp scanners rely on a fan to circulate cool air - and dust - throughout the scanning process. But new cold scan technology allows Relisys to fully encapsulate the process. So you get unprecedented, dust-free accuracy.

Exceptional Value. What's more, our new technology is not only superior to the competition's - **it's more affordable!**

Plus, Relisys gives you **free software** with all of our scanners; like Caere OmniPage Direct, so you can scan text directly into your word processing program and Adobe Photoshop for image editing and manipulation.

Call today for details on the complete line, or to order direct.

Order Direct:

1•800•723•7744

Mac News

1-800-723-7744

International Orders Welcomed – 24hr Fax 312-871-4556

- *220v Products In-stock*
- *Low-cost International Shipping Rates*
- *Resellers Welcomed*
- *International Orders Shipped Daily*

Apple, the Apple logo, Macintosh, Macintosh Quadra and Power Macintosh are trademarks of Apple Computer, Inc. Prices subject to change without notice. A 2% surcharge applies to American Express purchases. All returned orders may be subject to a minimum15% restocking fee plus return shipping. Call for manufacturers' RMA before returning. Software, unless defective, cannot be returned after it has been opened. All warranties on Macintosh or Apple brand products sold by MacNews will be honored by MacNews or its authorized agents only. All other manufacturer's warranties still apply.

Got questions? Get answers!



radius

Call

Radius Precision Color Pivot
Built in video. Full page resolution, portrait and landscape.

AVEC Colour



$599

Avec Colour Scanner
600 dpi color scanner, interpolates up to 2400 dpi, with Free Adobe Photoshop LE.



GLOBAL VILLAGE COMMUNICATION

$319

Global Village TelePort /Mercury
19.2 data, 14.2 send/receive fax
TelePort /Gold 14.4 data and fax $279

AGFA



$999

Agfa StudioScan
600x300 dpi, interpolates to 2400 dpi, with Free Photoshop LE, FotoTune LE & FotoSnap

Displays & Cards

RASTEROPS



$1999

RasterOps 20T
20" Multimode Color Trinitron Display. 4 resolutions up to 1152x870.

20/20C 20" color multimode display	1549
PaintBoard Turbo XL	1149
New! PaintBoard Lightening	799

radius

Precision Color Display/17	1249
IntelliColor Display/20	1999
VideoVision Basic/Studio	Call/Call

LAPIS



$1049

Lapis 17T
17" Multi-resolution, Color Trinitron.

15" Full Page Gray Scale Display	419
Two Page Gray Scale Display	619

SUPERMAC

SuperMac 20TX•L / 21TX•L	Call/Call
Spectrum Power • 1152 (7")	1249
Thunder /24 w/Free DSP!	1699

PHILIPS



$529

Phillips 15" Color Display with built-in Speakers

Accelerators

DAYSTAR DIGITAL

PowerPC™ Call for prices on Power Mac upgrades

New Power Pro 601 66MHz/88MHz	Call/Call
Optional 1 MB cache for Power Pro	Call
Universal Turbo 040, includes FPU 33MHz/40MHz	799/979
Universal Power Cache, includes FPU 33MHz/50MHz	369/529
Fast Cache Quadra 610, 650, 700, 800, 900, 950	289

Scanners

UMAX

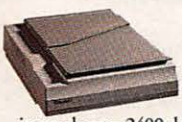


$1199

Umax UC 1260
1200 dpi, 24 bit color, with free full Photoshop

UC630LE /UC840	699/929
Umax 1200SE	New Price - Call

RELISYS



$929

RELI 2412LE
1200x300 hardware dpi, interpolates to 2400 dpi w/ Photoshop LE and free OmniPage OCR.

RELI2412T 1299
1200 x 300 hardware dpi, interpolates to 2400 dpi with full Photoshop and OmniPage OCR & Free Trans. Option.

Printers

GCC TECHNOLOGIES



$5999

SelectPress 1200
12x19, 1200 dpi

SelectPress 600, 600dpi, 11x17	3799
New Elite 600, 600dpi, 10 ppm	Call
PLPII, 300dpi, w/free ATM	529

newgen NewGen Systems Corporation

Turbo PS/660p, 600 dpi, 8mb	1499
Turbo PS/880p, 800 dpi, 12mb	1849
Imager Plus 6L 11x17, 600 dpi	3799
Imager Plus 12 12x18, 1200 dpi	Call

TEXAS INSTRUMENTS

TI microWriter PS23	699
TI microLaser Pro 600 PS23	1399

Multimedia



$499

Multimedia Super System
Featuring High Performance, Double Speed, Multisession CD ROM Complete with Powerful Stereo Speakers, Headphones, Microphone and 5 popular CD titles.

Systems

Apple™

PowerPC™

Call for the complete line of Quadras and PowerMacs.



Power Macintosh 6100/60
PowerPC Complete System $2,149
6100/60 MHz, FPU, Ethernet, 8 MB RAM/230 MB HD, Philips 15" Brilliance color display with built-in speakers, extended keyboard, System 7.1 and FREE Nisus word processing software.

Storage

FOCUS enhancements

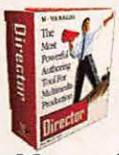
44 MB Removable Drive	329
CD ROM Drive	449
105 MB 3.5" Removable Drive	459
128 MB Optical Drive	999



$449

FOCUS 88R/W44 MB Removable Drive
Includes free cartridge.
Speedy 20 ms access time.

Software



MACROMEDIA

$799

Macromedia Director 4.0
The most advanced set of cross-platform authoring tools ever!



Specular Infini-D 2.6
Power PC-Ready!

$429

Specular Collage 219



ALDUS.

ALDUS PAGEMAKER.

$549

Aldus FreeHand 4.0 379

We carry the complete lines of both Adobe and Aldus Software.

MacNews

1555 SHERMAN AVENUE SUITE 361 • EVANSTON, IL 60201

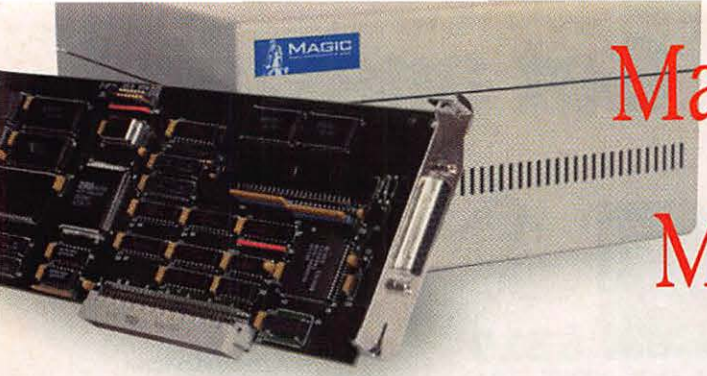
MacNews Hours: M-TH 8am-7pm; Fri til 6pm (CT) Sat 10am-2pm

1-800-723-7744

24hr Fax 312-871-4556 • International Orders Welcomed

Customer Service Hotline: 1-800-677-3888

Circle 172 on reader service card



Magic 1GB RAID $799

Upgrade for the PowerPC 8100

Magic 2GB Tape $699

The Fastest 2 GB Tape

Utilize the advanced SCSI features of the your PowerPC to the fullest with the Magic 1GB RAID upgrade, the ideal solution for desktop video on the PowerPC. RAID levels 0 and 1 and/or levels 0,1,4, and 5 with access times down to 4ms and transfer rates up to 10 MB/Sec at RAID level 0 can be configured from software. The system is compatible with SCSI 1 and 2, SCSI Manager 4.3. RAID drives are all metal construction complete with all cables.

	Upgrade	External
1.0 GB RAID	$799	1,899
2.0 GB RAID	$1495	2,699
4.0 GB RAID		$2999
18.0 GB RAID		$9495

The Magic 2Gb tape drive will backup data at speeds over 68MB / Minute. It is the only tape drive fast enough to keep up with a RAID drive. You can do a full 1GB backup in only 15 minutes and features a two year warranty. Retrospect 2.1 included.

RailGun Dual Screen Accelerators *For Plus, SE, and Classic.*

	RailGun	Pro
68030 RailGun 16MHz	$279	$299
68030 RailGun 25MHz	$299	$399
68030 RailGun 33MHz	$399	$499
19" Two Page Monitor		$299

*All prices quoted for SE version. Call for pricing on Classic or Plus version

Magic Memory

All Magic memory has a 30 day money back guarantee and a lifetime warranty.

1 MB 30 pin 80 ns.	$35
2 MB 30 pin 80 ns.	$68
4 MB 30 pin 80 ns.	$124
4 MB 72 pin 60/70/80 ns.	from $129
8 MB 72 pin 60/70/80 ns.	from $259
16 MB 72 pin 60 ns. non-composit.	$549
PowerBook RAM	Call
Newton 1MB / 2 MB	From $159
LC/Quadra VRAM	$29/19
ColorBlaster LC™	$149

Magic Network

Magic Net Adapter	$12
Manufactured under license from Farallon.	
Magic 10BaseT Adapter	$49
Magic 10BaseT/ ThinNet Adapter	$49
Magic 8 /16 Port 10BaseT Hub	$149/249

Magic Modems

All FaxModems come with full feature Fax STF™, Microphone Lite®, America Online, and Compuserve Startup Kit.



Magic FaxModems

New

Magic 28.8 V.Fast Class $229.00
115,000bps modem. 14400bps send & receive fax, V.42bis/V.32bis hardware & MNP-1-10 protocols. 2 year warranty, 30 day money back guarantee.

Magic 14,400 Data Fax Modem $139.00
57,600 bps data. 14400bps S/R fax, V.42bis/V.32bis, MNP-1-5 protocols. Beats the Supra Lc Hands Down in Performance

With VoiceMail	$189
High Speed Modem Cable	$15
Hardware Handshaking.	

Magic PowerBook Int. Modems

14400 bps Data/FaxModem	$169
57,600 Data 14400 Fax, V.32bis, V.42bis, MNP 1-5.	
24/96 Data/FaxModem	$79
2400bps modem. 9600bps send & 4800bps receive fax. V.42, MNP 1-5.	

Magic Hard Drives





° **Precision**
- A premium optical cartridge
- Free data recovery
- Lifetime warranty

Magic 240 Ext. for $299

Magic 1.0 GB †† Ext. 9 ms	$799
Magic 2.0 GB †† Ext. 9 ms	$1199
Active Terminator	$39

Custom configurations available.

Manufacturer	Sizes Available in Megs.			
Maxtor	345	540	1200	1240
Micropolis	1200	1700	2400	3000
Quantum ELS	127	170		
Quantum Go	85	127	170	256
Quantum LPS	240	270	340	525
Quantum PRO	700	1225	1800	
Empire	540	1080		
Seagate	1200	2500	3400	9.0
Barracuda	1900	2500	5000	
SyQuest	44	88	200	270
Fujitsu	240	520	1200	2400

Magic Optical

Magic 128MB Optical**	$719
Magic 230/256MB Optical	$899
Magic 1.3GB Optical	$2199
Precision 128 Carts / 10 Pack°	$27/240

Magic SyQuest

2 Year Warranty w/5 Year Warranty on Cartridges

Magic 44R SyQuest**/Cart	$299/56
Magic 88C SyQuest**/Cart	$349/85
Magic 200 SyQuest**/Cart	$499/95
Magic 270 SyQuest**/Cart	$499/75
Iomega 150 Transportable*/Cart	$579/99

* One Year Warranty
** Two Year Warranty
***Three Year Warranty
†† Five Year Warranty

PowerBook Accelerators



MacProducts USA can transform your Powerbook 140 or 145 into a 170, your 160 into a 180, or your DUO 210 into 230.

140 Upgraded to 170	
25mhz (68030/68882)	$329
33mhz (68030/68882)	$399
145 Upgraded to 170	
25mhz (68882)	$129
160 Upgraded to 180	
33mhz (68030/68882)	$399
210 Upgraded to 230	
33mhz (68030)	$299

24 hour turn around backed with 1 year warranty.



MacProducts USA
800 622 8721

THIRD WAVE

International Sales 512-476-5295 Fax 512-499-0888

Magic. Hard Working Tools For Your Macintosh Since 1985.

Corporate & Educational purchase orders accepted. MasterCard, Visa, Discover, American Express & COD accepted. Prices subject to change & availability. Texas residents add 8% sales tax. MacProducts cannot be responsible for errors in typography or photography. MacProducts offers a 30-Day Money Back Guarantee on all Magic™ Products, excluding Original Shipping. Call for RMA before returning merchandise. Returns subject to a restocking fee. All brands & product names are trademarks of their respective holders.

M74MW

Circle 175 on reader service card

Still Faster Than Fujitsu for $719

Magic 128 Optical With a 2 Year Warranty



- **Faster than the Fujitsu 128**
- **Twice the warranty 2 years**
- **Better Software than APS or FWB**
- **Authorized Repair Center**

The 128 mechanism used in the Magic 128 Magneto-Optical was rated in MacWorld December 93 as being 15% faster overall than the Fujitsu 128. The Magic 128 Optical has a max transfer rate of 3.3 MB/Sec using a split head laser design.

Magic 128 Optical ** $719
Magic 256 Optical ** $899

Magic CD-ROM

Absolute CD-ROM Compatibility and Blazing Speed. The AllCache™ driver software replaces your CD-ROM drive's original driver software, allowing drive access functions to be sped up significantly.

Magic CD Pro 4101Toshiba $349
Magic CD Pro 3401Toshiba $499
Magic CD Pro 6 Quadraspin™ $1199

CDs

CD-ROM Multimedia Encyclopedia $49
W/purchase of CD Drive
6 CD Bundle $49
Call for CD-ROM Catalogue ◆



JetInc. Ink Jet Refills TwinPacks for Deskwriter
Two Pack Black $15.99
BUY 3 GET 1 COLOR FREE
High Capacity Black $19.99
Apple Color printer BJ800, 550C, 560C 310 BJ300CALL



Radius
IntelliColor 20i 1888.00
PrecisionColor Pro 24x 1245.00



Diimo 50Mhz $413.00
Diimo 50Mhz With FPU $518.00



TI Microlaser Pro PRO 600 PS23/PS 65 $1375.00/1525.00
TI MicroWriter $679.00



Umax 630 LE $698.00
Umax 1260 $1149.00



Wacom ArtZ and 12 x 12
6x9 $269
UD1212RM $499



Apple PowerBook 180c 4/160 $Call



Cartridges
44MB $55.00
88MB $85.00
105MB $64.00



Quark Express 3.3 $539.00

SYSTEMS	
Custom Configurations Available	
PowerMacs from	$1699.00
PowerMac Upgrades	Call
Quadra 840av	$2,650.00
Quadra 660av	$1,529.00
Quadra 650	$1,899.00
Quadra 610	$1,349.00
Quadra 605 4/80	$849.00
Duos/PowerBooks/Newtons	Call

COMMUNICATIONS	
Asante 10T Hub/12	$449.00
Asante 10T Friendlynet	$54.00
Asante 10T Hub/8	$205.00
Starnet Ethernet Card	$97.00
Magic 8 Port 10BaseT Hub	$149.00
Dayna Etherprint T	$325.00
Dayna Pathfinder	$575.00
Farallon Etherwave AAUI	$99.00
Farallon Timbuktu 5.0	$119.00

INPUT	
Abacus Keypad	$89.00
Apple Extended Keyboard	$158.00
Mac Pro Keyboard	$115.00
DGR Extended Keyboard	$79.00
Kensington Turbo Mouse	$99.00
Wacom ArtZ	$279.00
Wacom UD1212R	$509.00

MODEMS & FAXES	
Supra 14.4 Mac Package	$212.00
Supra 28.8 Mac Package	$299.00
Global Village Teleport Gold	$269.00
Global Village Mercury	$309.00
Supra 14.4 LC Package	$155.00
Supra 14.4 PB Package	$215.00

PRINTERS	
Stylewriter II	$349.00
Apple Laser Pro 360	$1,525.00
Apple Laser Pro 630	$2,075.00
TI Pro 600 PS23	$1,375.00
HP Deskwriter's	Call
HP 4MP	$1,395.00
DEC Laser 1152	$649.00
GCC ColorTone DyeSub	$8,935.00
Kodak 450 GL	1,545.00

VIDEO SOLUTIONS	
Supermatch 20TXL	$2,149.00
PressView 21	Call
Supermac 17T Trinitron	$1,045.00
Thunder II	$2,299.00
Thunder II GX	$2,699.00
Digital Film	$2,849.00
E-Machines T-16II	$1,149.00
E-Machines T-20	$2,199.00
Futura II SX	$425.00
PaintBoard Lightning	$785.00
Radius TPD 20GS Display	$789.00
Precision Color Pro 24xk	$785.00
Precision Color Pro 24xp	$449.00
PhotoBooster	$769.00
VideoVision Studio	$3,299.00
Rasterops 20 Trinitron	$2,199.00
Rasterops 2020c	$1,499.00
Moviepack w/Premier 3.0	$1,149.00
Precision Color Display 17"	$1,059.00
Paintboard Turbo/Pro	$1095/1299.00
Apple Color Plus 14"	$319.00
Apple Audiovision Monitor	$599.00
Lemans GT	$1899.00
Sony T1730	$1,025.00
Nec 4/5/6	Call

ACCELERATORS	
Daystar 40 Mhz 128K	$999.00
FastCache Turbo	$165.00
Daystar 50 PowerCache	$430.00
Daystar PowerMac	Call
StageTwo Rocket 40	$1449.00
Radius Rocketshare	$299.00

DRIVES	
Magic/TW DAT 2GB	$899.00
Magic/TW DAT 8GB	$1,099.00
TW DAT 16GB	$1,299.00
Fujitsu 1.2GB	$949.00
Quantum 540MB	$499.00
Quantum 1.8GB	$999.00
PLI 40R/88 Syquest	$329/469.00
PLI105 /270 Syquest	$429/629.00
PLIDAT 4GB	$1,399.00

SCANNERS	
Microtek IIXE Scanmaker	$975.00
Microtek IISP Scanmaker	$729.00
Microtek 35T	$1349.00
HP ScanJet IICX	$939.00
Tamarak 1200	$1,564.00
Nikon CoolScan Int.	$1,920.00

SOFTWARE	
Adobe Illustrator 5.0	$355.00
Adobe Photoshop 2.5.1	$499.00
Aldus Pagemaker 5.0	$499.00
Canvas 3.5	$249.00
Filemaker Pro 2.1	$235.00
Fractal Painter	$239.00
Fractal x2	$67.00
Freehand 4.0	$369.00
Macromind Director 4.0	$699.00
MiniCad+ 4.0	$499.00
MS Excel 4.0	$279.00
MS Word 5.1	$279.00
Quickeys 3.0	$103.00
Suitcase 2.1	$49.00
System 7.1 Pro	$99.00
Myst CD	$47.00

MacProducts USA THIRD WAVE

On the Internet:
Domestic Sales - mp-sales@max.dgr.com
International Sales - mp-world@max.dgr.com

800 622 8721

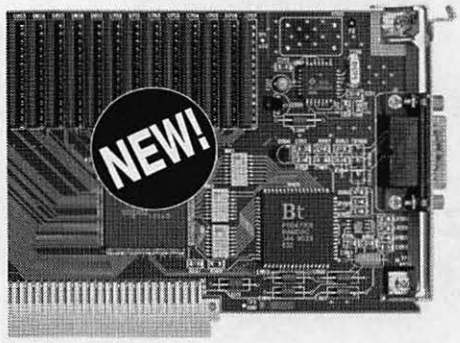
608 West 22nd Street Austin, Texas 78705 USA Tel 512 476 5295 Customer Service 512 472 8881 ext 403 Fax 512 499 0889 Canada 512 622 8721 **M74MW**

Circle 186 on reader service card

BELOW DEALER COST!

Below Dealer Cost Clearance! All Radius products are *new* with full manufacturers one year warranty!

All quantities are extremely limited and will be sold on a first come first serve basis. Dealer cost prices are shown below for comparison.



RADIUS PRECISIONCOLOR 24X $799

The Radius PrecisionColor 24X is the 'Best Price/Performance Value' *(MacUser)* 24-bit board on the market!

- Highly integrated 7" card design.
- $1000 plus savings vs. Thunder/24!
- 20% faster QuickDraw than Thunder/24!
- Additional features listed below.

VIDEO BOARDS

- On-board QuickDraw acceleration • 24-bit color
- Up to 1152 x 882 resolution • Compatible with virtually all monitors • Supports Nubus block transfer
- Multiple resolution switching 'on the fly'

	YOUR PRICE	DEALER COST
Radius Universal 24XP	$299	$456
Radius Universal 24XK	$599	$750
VideoVision	$1299	$1428

CALL FOR ALL OTHER RADIUS VIDEO BOARDS!

SuperMac SuperView $299 $525
- Similar to PowerView but also does TV!

POWERVIEW $199

Allows most PowerBooks and the Classic II to support color, grayscale, monochrome displays and projectors.
INTERNATIONAL VERSION $349

DEALER COST $435





COLOR PIVOT LE

WITH PURCHASE OF CARD.
We have cards for- SE/30, LC, IIsi, Nubus, Quadras.

$399

DISPLAYS

	YOUR PRICE	DEALER COST
Radius Color Pivot LE (see above)	$399	$860
E-Machines ColorPage 15	$499	$1307
•15" full page color display •35% larger image area •Flat tension mask screen		
Radius Grayscale Pivot	$499	$535
•Portrait and landscape orientations •Grayscale •Built-in video compatible		
Full Page Display	$399	$530
•640 x 870 resolution •75 Hz refresh •Grayscale •Built-in video compatible		
Radius Color Display/21	$1899	$1989
•Compatible with Centris or Quadra built in video (16 bit on Quadra 950) •1152 x 870 resolution •True WYSIWIG mode		
Precision Color Display/19	$1499	$1749
•Compatible with Centris or Quadra built in video (16 bit on Quadra 950) •Multiple resolution switching 'on the fly'		
Precision Color Display/19 with 24 bit video card	$2298	$1749
Sony 20 inch Trinitron	$1899	$2065
Radius 21 inch Grayscale	$899	$978
•Grayscale •Compatible w/Centris or Quadra built in video		
RasterOps 20 inch Display	$1399	$1446
RasterOps 20 inch Trinitron	$1899	$2209

ROCKETS/ACCELERATORS

RADIUS ROCKET 68040 FROM $599

•68040 processor •Supports up to 128 MB of standard RAM in 8 SIMM slots •QuickDraw acceleration w/Radius boards

	YOUR PRICE	DEALER COST
Radius Rocket 33 MHz	$899	$1248
Radius Rocket 25 MHz	$699	$999
Radius Rocket 25i	$599	$830
RocketShare — *Multiprocessing on your Mac!*	$899	$1248
33MHz or 40MHz Upgrade *for the Quadra 950, 900, or 700*		$349

OTHER SPECIALS!

APPLE LASERWRITER Postscript printer 8 ppm $499
Limited quantities, 600 dpi upgrades available.

Apple LaserWriter Parts-

Apple LaserWriter Fuser Assembly	$199
Apple LaserWriter Laser Scan Assembly	$199
Apple LaserWriter DC Controller	$199
All LaserWriter/LaserWriter Plus Parts in stock!	CALL

800.375.9000

CRA SYSTEMS

CALL FOR MAC SYSTEMS & PARTS!

Quadra 950 - Below Dealer Cost!!

CPUs

Mac Plus 1/0	299
Mac SE 1/20	399
Mac II 0/0, Rev B ROM	399
Mac IIx 0/0, 800K/1.4MB	699/799
Mac IIcx 0/0, 800K/1.4MB	499/599
Mac IIci 0/0, 800K/1.4MB	799/899
Quadra 840AV, 900, 950, 800, 700	CALL
PowerBook 170 8/80 (active matrix)	1799
PowerBook 140 4/40	999
All other CPUs	CALL

UPGRADES

Quadra 900 to 950	999
Mac II to IIfx	999
Mac SE FDHD upgrade	349
Mac II FDHD upgrade	399

CARDS- Network

Apple Token Talk 1/4-4/16	399/599
DCA Mac Irma 3270	499
DCA Mac Irma 3270 for SE30	499
Ethernet boards for SE/SE 30	99
Ethernet LC thin coax	99
Shiva FastPath 4 Gateway	999

CARDS- Misc.

B&W TV card for Nubus	199
Apple IIe Emulation for LC	149
Apple IIci Cache Card	99
Apple Serial Nubus Card	399
Daystar Nubus Ram Card	499
Kodak Device Color Profile accel.	1999
IIsi NuBus adapter card	99
IIsi Daystar Dual PDS adapter	99
Orange Micro 286 board	199
TrueVision NuVista+ 2MB	1999

CARDS- Video

Apple 8.24 GC	599
Apple 8.24	399
Apple 8 bit for 13-14"	199
Apple Portrait/Two Page	149/249
E-Machines Colorlink EX/T	299
E-Machines Futura SX	349
E-Machines T19 card for SE30/IIsi	299
RasterOps 708+,8 bit for 20"	299
RasterOps 8LC card for LC	199
RasterOps 364 Frame Grabber	399
RasterOps 24 xli	1599
RasterOps 24 L	1299
RasterOps Editing Aces	2999
RasterOps 24 XXLTV	2399
SuperMac Thunder 24	1699
SuperMac Thunder II	2799

DRIVES

Apple 40MB 3.5 Internal HD	49
Apple 5.25 External PC Drive	49
Dayna 360K/1.2MB-740K/1.44MB	499
Exabyte 8mm 5GB tape backup	1599
Maxtor 800MB WORM Drive	999
Ricoh HyperSpace 600MB Optical	1999

SOFTWARE

PageMaker 5.0	449
Lotus 123	89
4D 1.06/3.0	399/549
AppleShare File Server 2.0	449
GraceLan 50 User Pack	199
GraceLan Unlimited Corp. Pack	499

MONITORS

Apple 12" Mono/Gray Scale	199
Apple 15" FPD Mono/Gray Scale	449
Apple 21" TPD Mono/Gray Scale	999
E-Machine ColorPage15 w/8bit card	499

INPUT/PRINT

Apple Scanner	499
Abaton Flatbed 300 scanner	399
Dest 1020 Scanner	499
HP Scanjet	499
Leaf 45 Film Scanner	12999
Howtek ScanMaster III+	3999
Mirrus Film Recorder	2999
Montage FR-1	3495
Voice Navigator II	499

PRINTERS

Apple ImageWriter I/II	149/289
Apple ImageWriter Wide/LQ	269/449
Apple LaserWriter 8ppm PS	499
Apple LaserWriter IInt/ntx	799/999
AST Turbo PostScript Laser	1399
GCC WriteMove II portable	399
HP PaintWriter XL	599
IBM Pageprinter II	999
LaserMax 800, 135 fonts	2499
Mitsubishi G370-10u 300dpi color	1999
NEC LC890 SilentWriter	999
Newgen Turbo PS400-PS/840e	1099/1499
QMS ColorScript 100 m10	1999
QMS ColorScript 100 m30 11x17	4999
QMS 4MB Upgrade, legal pack for ColorScript 100 (above)	499
Qume Crystal Print Publisher II	999
Qume ScripTen	1399
Ricoh Laser 6000/ps	999
Texas Instruments 2108	999

MISCELLANEOUS

110-1500 Watt Battery Backups	99/799
Apple LQ cut sheet feeder	149
Apple LQ bin expansion	79
Apple Universal Monitor Stand	49

PARTS

Mac Plus logic, No ROMs	99
Mac II logic Rev. B ROM (new)	199
All Logic Boards	CALL
All Power Supplies	CALL
Mac Plus power supply	129
SE-Analog board	129
SE power supply	129
1.44 FDHD Floppy (NEW)	199
400K/800K Floppy Drive	49/99
Apple 5.25 External PC drive	49
Apple ADB mouse (NEW)	59
IIcx case and power supply	199
Mac II/IIfx case & power supply	199
Quadra 700 case & power supply	399
CRT and Yoke for Plus, SE	49
All LaserWriter parts	CALL

Over 20,000 items/parts in stock, if you don't see it — CALL US!

800.375.9000

WE BUY MACS!!
Please fax list when possible. Corporate, Government, and University PO's welcome. Prices reflect cash discounts. Mastercard, Visa, AMEX, & Discover Card accepted. Lease/Purchase financing available.

Consultants/Dealers 817.754.2131
International Sales 817.754.2120
TeleFax 817.754.2345

CRA Systems
300 South 13th St.
Waco, TX 76701

Circle 20 on reader service card

HARD DRIVES



FUJITSU 1.2GB ONLY $865

Capacity	Description	Internal	External	
520MB	3.5" HH 9ms	$485	$545	
1200MB	3.5" HH 9ms	$865	$925	SALE
2400MB	5.25" FH 11.5ms	$1385	$1485	

Fujitsu Drives carry a 5 year warranty

Quantum 540MB ONLY $465

Capacity	Description	Internal	External	
GO170MB	2.5" NB 17ms	$255	$385	
GO256MB	2.5" NB 17ms	$345	$445	
42 MB	3.5" LP 17ms	$109	$169	
85MB	3.5" LP 17ms	$165	$215	
170MB	3.5" LP 17ms	$205	$265	
240MB	3.5" LP 10ms	$245	$305	
270MB	3.5" LP 10ms	$265	$325	
340MB	3.5" LP 10ms	$305	$365	
540MB	**3.5" LP 10ms**	**$465**	**$525**	SALE
1000MB	3.5" HH 10ms	$795	$855	
1200MB	3.5" HH 10ms	$965	$1025	
1800MB	3.5" HH 10ms	$1075	$1135	

Go Drives carry a 1 year warranty
The rest carry a 2 year warranty

Seagate 2400MB ONLY $1745

Capacity	Description	Internal	External	
1200MB	3.5" HH 10.5ms	$865	$925	
1900MB	Barracuda 1, 8ms	$1535	$1595	
2400MB	**Barracuda 2, 8ms**	**$1745**	**$1805**	SALE
2400MB	3.5" HH 10.5ms	$1545	$1605	
3400MB	5.25" FH IIms	$2150	$2250	

Seagate Drives carry a 1 year warranty.

Maxtor 290MB ONLY $275

Capacity	Description	Internal	External	
290MB	**3.5" LP 10ms**	**$275**	**$335**	SALE
345MB	3.5" LP 10ms	$335	$395	
540MB	3.5" HH 8.5ms	$699	$759	
1200MB	3.5" HH 8.5ms	$1199	$1259	

Maxtor 3.5" Drives carry a 1 year warranty.

0% DOWN SUPER LEASING



Call our leasing department for all your leasing needs. You will enjoy the freedom to lease the equipment you want to meet your individual needs. We can lease you a complete system or a hi-res printer. You can choose a 1, 2, 3, 4 or 5 year **100% tax deductible lease.**

DTP SUPER SYSTEM

- Quadra 650AV 33MHZ, 68040 processor
- 16MB RAM, 1GB hard drive, X keyboard
- 17" hi-res monitor with 24-bit video
- SuperMac Spectrum IV,
- 24-bit accelerator/video card
- ScanMaker IIAV, 1,200 x 600 dpi scanner with Adobe Photoshop LE
- Syquest 88C read/write drive
- Texas Instruments Pro 600, 9ppm, 600dpi laser printer

Special Note: You can create any customized package of equipment to meet your own special needs. Just call our leasing department for a lease estimate.

Three Super reasons to lease from SuperMicro:

1. 24 hour approvals
2. 100% tax deductible
3. Over 20,000 products available for Lease

24 hour approvals, CALL NOW!

SCANNERS



Model	Description	Price
MICROTEK	**UMAX**	
ScanMaker II/UC630	24-bit Color, 600x300 dpi	$659/659
ScanMaker IIxe/UC840	24-bit Color, 600x300 dpi	$989/895
Transparency	For Microtek & UMAX	$599/699

SCAN AV

Scan AV 4800x4800 dpi 24-bit color only $589

Scan AV 6400x6400 dpi 24-bit color only $699

SYSTEMS



Model	Description	Price	
Q950 8/200	SuperMac 20T, Keyboard	$5599	
Q840AV 8/200/CD	**SuperMac 17, Keyboard**	**$4099**	SALE
Q650 8/200	17" Monitor, Keyboard	$2799	
Q660AV 8/250	14" Monitor, Keyboard	$2139	
Q605 8/160	14" Monitor, Keyboard	$1489	
PM8100 8/200/CD	SuperMac 20T, Keyboard	$6789	
PM8100 8/200/CD	SuperMac 17, Keyboard	$5659	
PM7100AV 8/200/CD	SuperMac 20T, Keyboard	$5999	
PM7100 8/200/CD	SuperMac 17, Keyboard	$4199	
PM6100 8/160	14" Monitor, Keyboard	$2169	

TAPE DRIVES



Model	Capacity	Size	MacKit	
Archive Viper 250	250MB	3.5"HH	$499	
Archive Viper 525	500MB	3.5"HH	$699	
Sony SDT-2000	2Gbyte	3.5"HH	$879	
Sony SDT-4000	**4Gbyte**	**3.5"HH**	**$899**	SALE
Sony SDT-5000	5-16 Gbyte	3.5"HH	$1299	
Exabyte 8200	2Gbyte	5.25"FH	$1299	
Exabyte 8500	5Gbyte	5.25"FH	$2199	
Exabyte 8205	2-5Gbyte	5.25"HH	$1595	
Exabyte 8505	5-10Gbyte	5.25"HH	$2275	

Includes external drive, 25/50 SCSI Cable, MAC SW II, and Terminator. Retrospect add $75

Tape			
Sony DAT	$22	Maxell 8mm	$19

SYQUEST DRIVES



Model	Internal	External	
Syquest 270	$499	$599	
Syquest 200	**$459**	**$499**	SALE
Syquest 105	$279	$319	
Syquest 88C	$275	$329	
Syquest 44	$199	$229	

Includes external drive, 25/50 SCSI Cable, Mac SW, Terminator

Cartridges	44MB cartridges only $49.99
270MB Cartridges (5+ or with drive purchase)	$98.99
200MB Cartridges (5+ or with drive purchase)	$98.99
105MB Cartridges (5+ or with drive purchase)	$58.99
88MB Cartridges (5+ or with drive purchase)	$72.99
44MB Cartridges (5+ or with drive purchase)	$49.99

OPTICAL DRIVES



5.25" Optical Drives SONY 650MB ONLY $1999

Model	Capacity	Seek	MacKit	
Sony-650	**594/650mb**	**66ms**	**$1999**	SALE
Ricoh-9200 EX	594/650mb	35ms	$1849	
MaxOptix-Tahiti II/III	594/650/1gb	25ms	$2599/2999	
PMO-650/1.3	594/650/1.3	19*ms	$2599/2799	
HP1.3	594/650/1.3GB	25ms	$2695	

Includes external drive, 25/50 SCSI Cable, Mac SW, and Terminator

Cartridges	Price
DSC 594/650MB	$85
3M 594/650MB	$99
Sony 594/650MB	$119
Sony 1.3GB	$139

650MB ONLY $85

3.5" Optical Drives Panasonic 128MB ONLY $689

Model	Capacity	Seek	MacKit	
Panasonic	**128mb**	**35ms**	**$689**	SALE
Fujitsu-128	128mb	30ms	$865	
Sony P-301	128mb	35ms	$1049	
Most-256	128/256mb	37ms	$895	

includes external drive, 25/50 SCSI Cable, Mac SW, and Terminator

Cartridges	Price
DSC 128MB	$29
Komag 128MB	$33
Sony 128MB	$45

128MB ONLY $29

No One Has A More Complete Family of 5.25" & 3.5" Rewritable Optical Drives than SuperMicro

DISK ARRAY RAID SYSTEMS



Disk Array RAID Systems	MacKit
1.0 GB RAID System, 2 x 540MB hard drives	$1329
2.0 GB RAID System, 2 x 1.0GB hard drives	$2129
4.0 GB RAID System, 2 x 2.0GB hard drives	$3499
6.0 GB RAID System, 2 x 3.0GB hard drives	$3999

Includes external drive, 25/50 SCSI Cable, MAC disk array software, and Terminator.

A SuperMicro disk array combines multiple hard drives into a single disk, offering high speed data transfer with seek times as low as 5 msec.

There are many advantages to disk arrays over individual hard drives:

- *Higher transfer rates*
- *Faster seek times*
- *Better data integrity*
- *RAID level 0, 1, 4, 5 supported*

BUNDLE SPECIAL



Purchase $400 or more and get Adobe Photoshop 2.5 full version for $250

PRESENTATION COMBO

Syquest 44 & Dual Speed Photo, CD-ROM drive

$555



A Syquest cartridge is large enough to hold several presentations. Use the CD-ROM drive as a source of graphic images. With this combo, you can bring everything you need on disk, and quickly connect it to your client's computer for the presentation.

385 Van Ness Ave. #110, Torrance, CA 90501 • 1-310-782-5760 International • 1-310-782-5974 Fax

800-352-3415

MasterCard VISA UPS Federal Express



Circle 126 on reader service card

SuperMicro

We Specialize in Image Processing

UMAX KODAK FUJITSU SyQuest RICOH TOSHIBA PROCD MICROTEK dsc CONNER Maxtor dsc Quantum

For Best Prices and Service Call BOTTOM LINE 1-512-472-4956

radius

Precision Color 17"/21"	$999/call
IntelliColor Display 20i	1849
LeMans GT	1899
Precision Color 20V	1575
Precision Color Pro 24X	1245
Precision Color Pro 24XP	439
VideoVision Studio	3299
StageTwo Rocket	1499

WACOM

ArtZ	$269
ArtZ Bundle	469
12x12 UD + Painter	689
12X18 UD electrostatic	810
12X18 UD transparent surface	675
Painter v2.0 w/Tablet	199
Painter X2	67
UD1212RM Tablet	499

RasterOps

20" 20/20c Multiscan	$1485
20T" Multi-Scan Trinitron	1999
DuoMate	259
MoviePak 2 Pro	3300
PaintBoard Turbo XL	1099
PaintBoard Lightning	780
Clearview 17"	899
Horizon 24	2199

SUPERMAC

Spectrum Power 1152	$1179
SuperMatch 20 TXL	2149
PressView 21" Trinitron	3249
Digital Film Delux	3199
Thunder II / GX	2299/2699
Spectrum 24 Series V	Call
ThunderStorm	419
Supermatch 17•T	1045

iOMEGA

Transportable 90	$335
Transportable 150 Pro	479
90MB Cartridge	92
150 MB Cartridge	99
150 MB Cartridge Tri-Pack	313
MacFloptical 21	449

Farallon

EtherWave Transceiver	$97
EtherWave adaptors for Nubus/LC	179
EtherWave adaptor for Powerbook	289
EtherWave Printer Adapter	199
PhoneNet Din 8	25
PhoneNet Din 8 10pack	195

Global Village Communication

Mercury	$309
Gold	269
Silver	239
Bronze II	93
One World	Call
Duo Software	74

FWB incorporated

SledgeHammer 2000FMF	$2699/2829
SledgeHammer 4200FMF	5099
PocketHammer 1GB int	1299
PocketHammer 2GB int/ext	2199/2399
Hard Disk Toolkit 1-5	119
SCSI JackHammer	605

HEWLETT PACKARD

ScanJet II cx	$939
DeskWriter 310	299
DeskWriter 520	299
DeskWriter 550c	430
DeskWriter 560c	579
DeskWriter C	1389
LaserJet 4ML/4MP	1029/1395

ASANTÉ

10T Hub/12,Hub/8	$269/219
Mini EN/SC,EN/SC 10T	289/231
MacCon+IIE64	137
MC3 Nubus	185
Asanté Print Thick/Thin	328
Friendly Net 1001	54
Asanté Lite LC	99

Power PC

6100 CD 16/500,16/1GB	$2767/3048
7100 16/500, 16/1GB	3342/3623
7100 CD 16/500,16/1GB	3601/3882
8100 16/500,16/GB	4611/4892
8100 CD 16/500,16/1GB	4877/5158
Softwindows	249
PowerMac PDS Upgrade	629

SyQuest

44MB Drive	$299
88c MB Drive	359
200 MB Drive	499
270 MB Drive	499
44 MB/88 MB Cartridge	57/88
200 MB Cartridge	99
270 MB Cartridge	75

MAC SYSTEMS

Custom Configuration Available	
Duos/PowerBooks/Newtons	Call
Quadra 610	$1349
Quadra 650	1899
Quadra 660AV	1529
Quadra 840AV	2650
Extended Keyboard w/Purchase	69

SCANNERS

Leaf Scanner 35 / 45	$7499/Call
Microtek 35T/45T	1339/Call
Mirror 600dpi	649
Nikon Coolscan Ext. 35mm Color	1899
ScanMaker II XE / SP	975/ 729
Tamarak 600c w/Photoshop	799
Tamarak 1200	1564

PRINTERS

3M Rainbow Dyesub	Best Price
DataProducts LZR1580	$3069
DEC Laser 1152/5100	649/Call
Fargo Primera	880
GCC	Call
LaserWriter Pro 630/810	2075/4599
LaserWriter Select 360	1525
Proof Positive	6695
QMS 860 Plus	5299

INPUT DEVICES

Gravis GamePad Mac	$29
MacPro Plus 105	115
Other Language Keyboards	109
PowerKey Remote	35
Turbo Mouse ADB V4.0	99
Summasketch Fx	419

NETWORKING

8 Port Hub 10BaseT	$149
Dayna Mini Hub	234
Ethernet for IIsi, Nubus, LC, & SE	99
MacCon + IIET64	148
SE30 10BaseT and AUI	99
Starnet 8 10BT Hub	199
Thin/10BaseT Transceiver Adapter	49

DRIVES & TAPES

IBM 1.0GB/9ms	$699
IBM 2.0GB/9ms	1149
Barracuda 1.9GB/8ms	1539
Barracuda 2.5GB/8ms	1805
Barracuda 5G	call
Seagate Hawk 2.4 GB	1539
Granite Active Terminator	39/59
Quantum 540 / 1080 Empire	499/899
Quantum 1.8GB	1399
Seagate Elite 3.4GB	2249
Toshiba 340 PowerBook	669
Quantum Empire 1.08 GB	859
Wren 9GB	Call
4400PMO 1.3 GBMac Ext	2750
Legend Multimedia CD ROM Drive	495
Tahoe 128 Optical	920
DGR 128/256 Optical	Call

SOFTWARE

Database Development

4TH Dimension v3.0	$559
MS FoxPro	94
FileMaker Pro 2.1	235
Retrospect	139
Times Two v2.0	85

Business Software

Colleague v3.4	$549
Datebook	45
In Control v2.0	80
M.Y.O.B. v3.0	104
Now Contact/Compress	59
Now Up To Date v2.0	59
Quicken 4.0	41
Touchbase Pro	42

Games

Hellcats Over the Pacific	$37
Iron Helix CD ROM	59
Myst CD ROM	51
Prince of Persia CD ROM	32

Presentation/Education

MacAcademy Tapes	$36
MacroMind Director v4	699
MacroMind Action Bundle	279
MS Powerpoint v3.0	299
Personal Training Systems	44
Persuasion v2.12	318

Graphics/Word Processing

Freehand v4.0	$369
Collage	189
Color It! CD ROM	79
Debabelizer	275
DesignCad 2D/3D v3.0	143
Fetch	97
Fontographer v4.0	249

Sony Monitors



175E $1199
CPD 1730 1025

Supra Fax Modem



14.4 MacPac/LC$209/155
28.8 MacPac 299

DGR Keyboard



Extended 105 keys $69

Magic Modem 28.8



14.4 bps. $139
28.8 bps. 229

BOTTOM LINE DISTRIBUTION

1-512-472-4956

24-Hour Fax 1-512-476-6399 • 1219 West 6th Street • Austin, Texas 78703 USA

Circle 63 on reader service card



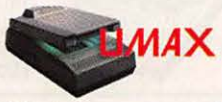
PowerPro 60/80MHz	$1449/1949
PowerPro Cache	498
50MHz PowerCache	430
FastCache Quadra	335
Quadra 040	1390
Turbo 040 40MHz	1092
Turbo 040i 33MHz	739



Infinity 88 internal/external	$389/469
Infinity 200/220	669/609
1.3GB Maxoptical	2799
MiniArray 1.0GB	2049
Quick SCSI	309
21MB Floptical	369
600MB Optical	1429



1MB TI Memory	$40
57 Font Upgrade for TI	55
MicroWriter PS23	679
MicroWriter PS65	989
MicroLaser Pro 600 PS23	1299
MicroLaser Pro 600 PS65	1465
PowerStep 40 MHz Upgrade	325



630LE Flatbed	$675
630 Flatbed	1039
840 Flatbed	939
1200SE 3000dpi	2799
Auto Document Feeder	399
Transparency Adapter	439
1260 Flatbed	1175

Reach us via Internet.

Domestic sales - sales@max.dgr.com
International sales - world@max.dgr.com

Framemaker	595
Gallery Effects	135
Illustrator v5.0	369
Kai's Power Tools 2	95
Kid Pix v1.2	34
MacDraw Pro	235
MetamorphisPro	86
Excel V4.0/Word 5.1	279
Pagemaker v5.0	499
Painter v2.0	249
Photoshop v2.51	499
Premier	399
Quark XPress 3.3	539
Showplace/Renderman v2.0	369
Sketcher	49
Steamline	130
StudioPro	1099
Utilities	
AutoDoubler v2.0	$56
Corel SCSI	64
Disk Doubler v3.7	49
Disney Collection Screen Savers	32
FontoMatic	39
MacLink Plus/PC v7.0	119
MacTools 3.0	86
Norton Utilities v2.0	89
Quickeys v3.0	102
RamDoubler	50
Sam 3.5.8	65
SoftPC /Pro/Windows	95/185/285
Star Trek The Screen Saver	32
Stuffit Deluxe v3.0	63
Suitcase v2.1	49
Super ATM	92
DISPLAYS	
16"/17" Trinitron	$699/749
Apple 14"/16"	319/1199
Apple AudioVision	699
Lapis Full Page	365
NEC 3FGE 15"/NEC 4FGE 15"	625/715
Sony GDM 17SE1/2036S	1199/2099
Sony 1604S	925
T16II E Machines	1149
ACCELERATORS	
DiimoCache 50mhz/FPU	$415/519
Newer Tech. Variable Overdrive	259
Radius Rocket 33Mhz	935
TransWarp 4340 68030-128K 40MHz	379
TokaMac 40MHz 040 FX	1449
MODEMS & FAX MODEMS	
Datalink PB 14.4 int. V.32 bis	$439
Hayes	Call
Magic 14.4 V.32 bis Datafax	139
Supra V.32bis LC Mac Package	155

Call Now for Free Catalog

VISA MasterCard DISCOVER DHL FEDERAL EXPRESS

TO ORDER FROM BOTTOM LINE: CALL 512-472-4956. PAYMENT: VISA, MASTERCARD, DISCOVER TAX: TEXAS RESIDENTS ADD 8% SALES TAX. PRICES AND ITEMS SUBJECT TO CHANGE AND AVAILABILITY. MAIL IN/FAX ORDERS ACCEPTED. TERMS: NO CHARGES UNTIL ORDER IS SHIPPED. SHIPPING: MINIMUM $5-UPS GROUND, BLUE, RED, FEDERAL EXPRESS. RETURNS MUST BE IN ORIGINAL CONDITION AND PACKAGE AND REQUIRE AN RMA#. SEAL MUST NOT BE OPENED ON SOFTWARE. RETURNS MAY BE SUBJECT TO A RESTOCKING FEE. BOTTOM LINE DISTRIBUTION CANNOT BE RESPONSIBLE FOR ERRORS IN TYPOGRAPHY OR PHOTOGRAPHY. ORIGINAL SHIPPING IS NON-REFUNDABLE. ALL BRANDS, AND PRODUCT NAMES ARE TRADE MARKS OF THEIR RESPECTIVE HOLDERS.

INTERNATIONAL ORDERS: BOTTOM LINE PROVIDES THE EXTRA LEVEL OF SUPPORT INTERNATIONAL CLIENTS REQUIRE. 24-HOUR INTERNATIONAL FAX LINE. 220-VOLT VERSIONS OF MOST HARDWARE. DHL, UPS, FEDERAL EXPRESS DISCOUNT RATES AND CUSTOMS BROKERAGE. 2-3 DAYS DELIVERY TO MOST COUNTRIES.

B74MW

DGR Technologies



DGR Multi MAX and LC MAX

Upgrade your LC, LCII, LCIII and Performa 400 with the LC MAX. Increase the single expansion slot to four, add another hard drive and supplement your LC with an additional 40 watt power supply. Conflicting cards can be easily switched on or off as needed. Enter the world of Multi-Media with the Multi MAX! Equiped with a multi-session, double spin CD-ROM, and amplified stereo speakers, you can access the vast library of CD-ROMs available or listen to your favorite music.

Multi MAX $799.00 LC MAX $299.00

DGR Power Raid Storage System



High speed RAID technology at a real world price. The DGR Power Raid Storage System is a RAID level 0 and 1 and/or level 0,1,4, and 5 array system. Access time is 4ms with transfer rates up to 10 MB/Sec (Sync) at RAID levels 0 and 1 using a 1.0 GB array on a 840av. The system is compatible with SCSI 1 and 2, SCSI Manager 4.3 (Async), and will work with all Power PC and Mac AV platforms. RAID enclosures are all metal construction complete with all cables and software. The Power Raid Storage System provides its own SCSI chain via a Nubus SCSI 2 card, allowing you to add more RAID enclosures as you need them.

4.0 GB $3,199.00 2.0 GB $2,299.00

DGR Optical Drives

DGR Technologies is committed to the excellence that has made us the industry leader. Each drive is shipped in an all-steel case with a universal 40 watt power supply, double-shielded SCSI cable, external terminator and a free cartridge. (Also for PC's!)



128 MB	$799.00		
256 MB	$899.00	1.3 GB	$2299.00
External PC Adapter	$199.00	Internal PC Card	$149.00

JetInc. Ink Jet Refills

JetInc is the most economical way to refill your ink jet printers. It provides over 50% savings, and incorporates recycled materials to help reduce landfill waste.



2Pk Black/Color	$15.99/$22.99		
2Pk High Capacity Black	$19.99	Apple Color Printer 2Pk	
550C 6Pk	$74.99	Black	$22.95
500c/550c/560c/310 8Pk	$55.95	Cyan/Yellow/Magenta	$29.95

ColorBlaster LC

Blazing 16-bit color graphics on monitors up to 14" using the VRAM slot of the LC, LC II and the Performa 400,405,430. Bundled with ColorIT! $169.00

Colleague Business Software



Colleague Business Software has functions such as appointment calendar; client/prospect file invoicing; job tracking, checkbooks; general ledger; sales,expense, and accounts receivable reports. MacWorld Editor's Choice award and 4 1/2 mice in MacUser. $499.00

800-235-9748

Monday-Friday 8am to 7pm CST DGR Technologies accepts MC, Visa, Discover, Pre-Paid & COD orders.
1219 West Sixth, Suite 205 Austin, Texas 78703 Tel. 512/476-9855 Fax 512/476-9551 AppleLink: DGR.

Circle 65 on reader service card

MEGA HAUS 1-800-786-1184

- Our 8th year selling quality drives at incredibly low prices.
- 30 Day money back guarantee.
- Fast, friendly, and smart service.
- Lifetime technical support.
- 24 Hour turnaround, 1 year replacement policy.
- We appreciate your business!

SyQuest INCREDIBLE SALE!

Complete External Subsystem Includes:
- Syquest drive in an external enclosure.
- 2 year warranty on drive & case.
- 1 FREE Cartridge, & 1 SCSI cable.
- External plug in SCSI terminator.
- Formatting software, and manuals.

88MB $419 105MB $349
200MB $579 270MB $569

OPTICAL DRIVES

Smart STORAGE SOLUTIONS

- High performance optical drives.
- Ask for your free "Dare to Compare" specification brochure.
- Includes SCSI Manager 4.3 compliant driver, cables, and 1 free disk.

Capacity	Model	Internal	External
128MB	SSS128	$649	$699
230MB	SSS230	$849	$899
1.3Gig	SSS1300	$2399	$2469

Power HD™ NOW AVAILABLE!
- Hard Drives fine tuned specifically for Power Macintosh computers.
- Includes SCSI Manager 4.3 compliant driver for best performance.

Capacity	Model	Internal	External
540MB	PHD540	$449	$509
1050MB	PHD1050	$769	$829
1750MB	PHD1750	$999	$1059

MICROPOLIS®
- New AV series hard drives are specifically designed for enhanced digital video and audio performance in applications such as multimedia, desktop publishing, and video editing.
- We will beat any advertised Micropolis price.

Capacity	Model	Internal	External
1000MB	MC2210AV	$869	$939
1700MB	MC2217AV	$1079	$1149
3000MB	MC1936AV	$2159	$2259

HARD DRIVES

Quantum™

WE HAVE THE DRIVE YOU WANT AT AN UNBEATABLE PRICE!



Capacity	Model	Internal	External
170MB	ELS170S	$179	$239
270MB	LPS270S	$238	$298
340MB	LPS340S	$275	$335
540MB	LPS540S	$444	$504
1080MB	EMP1080S	$739	$799
1800MB	PD1800S	$969	$1029

Capacity	Speed	RPM	Buffer	Brand	Warranty	Internal	External
105MB	19ms	4464	31K	Maxtor	1 Year	$469 (Type III PCMCIA)	
170MB	17ms	3600	32K	Quantum	2 Years	$179	$239
240MB	14ms	4500	256K	Fujitsu	1 Year	$309 (2.5" for Powerbook)	
270MB	12ms	4500	128K	Quantum	2 Years	$238	$298
340MB	12ms	4500	128K	Quantum	2 Years	$275	$335
530MB	13.8ms	4500	256K	Fujitsu	5 Years	$389	$449 BEST BUY!
540MB (LPS)	12ms	4500	128K	Quantum	2 Years	$444	$504
540MB (EMPIRE)	9.5ms	5400	512K	Quantum	5 Years	$509	$569
1052MB	8.5ms	5400	256K	Micropolis	5 Years	$779	$839
1060MB	9ms	5400	512K	Conner	5 Years	$749	$809
1080MB	9.5ms	5400	512K	Quantum	5 Years	$725	$785 BEST BUY!
1080MB	9.5ms	5400	256K	Fujitsu	5 Years	$725	$785
1440MB	9.5ms	5400	512K	Quantum	5 Years	NEW	CALL
1690MB	8ms	7200	1024K	Seagate	5 Years	$1459	$1559
1750MB	10ms	5400	256K	Micropolis	5 Years	$999	$1059
1800MB	10ms	4500	512K	Quantum	5 Years	$969	$1029
2145MB	8ms	7200	1024K	Seagate	5 Years	$1689	$1769
2148MB	9ms	5400	512K	Seagate	5 Years	$1429	$1529
2160MB	9.5ms	5400	512K	Quantum	5 Years	NEW	CALL
3020MB	11ms	5400	256K	Micropolis	5 Years	$2139	$2169

Includes formatting software and cables. We stock multiple bay enclosures for custom configurations.

SYQUEST DRIVES

Capacity	Compatible	Model	Speed	Buffer	Warranty	Internal	External
88MB	44, 88MB	SQ5110C	20ms	32K	2 Years	$369	$419
105MB	105MB	SQ3105	14.5ms	64K	2 Years	$289	$349
200MB	44, 88, 200	SQ5200C	18ms	64K	2 Years	$519	$579
270MB	105, 270MB	SQ3270	13.5ms	128K	2 Years	$509	$569

Media Qty 1 / 5 88MB $96 / $89ea. 105MB $58 / $56ea. 270MB $93 / $89ea.

INCLUDES 1 CARTRIDGE, formatting software, and cables. Multiple Syquest drive towers in stock!

CD ROM DRIVES

Brand	Model	Speed	Transfer	Type	Internal	External
Teac	CD-50	265ms	335KB/sec	Single disk	$299	$359
Toshiba	XM3401	200ms	330KB/sec	Single disk	$349	$409
NEC	CDR510	195ms	450KB/sec	Single disk	$439	$499 BEST BUY!
Pioneer	DRM-602X	300ms	307KB/sec	6 Disc Changer	n/a	$919
Pioneer	DRM-604X	300ms	614KB/sec	6 Disc Changer	n/a	$1169
Pioneer	DRM-1804X	300ms	614KB/sec	18 Disc Changer	n/a	$2099

Includes driver software with music play, $25 Photo CD processing coupon, and cables. Multi Drive CD Towers in stock!

TAPE DRIVES

Capacity	Type	Brand	Speed	Internal	External
250MB	QIC 150	Archive	7MB/min	$459	$529
2Gig	DAT	Conner	11MB/min	$839	$899
4-8Gig	DAT	Conner	88MB/min	$1269	$1329
4-8Gig	DAT	Hewlett Packard	42MB/min	$1089	$1109
4-10Gig	DDS-2 DAT	Sony	88MB/min	$1139	$1199 BEST BUY!
4-10Gig	DDS-2 DAT	HP (Fastest Tape!)	88MB/min	$1449	$1499

Includes Retrospect 2.0, 1 tape, and cables. OPTIMA DeskTape Software mounts DAT on desktop $289.

OPTICAL DRIVES

Capacity	Speed	Brand	Cache	Feature	Internal	External
1.3Gig	23ms	Hewlett Packard	512K	MultiFunction	N/A	$2679
1.3Gig	19ms	Maxoptix	4MB	MultiFunction	N/A	$2799

Includes formatting software, 1 disk, and cables. 256MB Fujitsu and 650MB HP models also in stock.

MEGA HAUS HARD DRIVES

1-800-786-1184
M-F 8-7 Sat 9-3 Central
Local (713)333-1910
Fax (713)333-3024
No International orders accepted.

CODE MW71

MasterCard DISCOVER VISA AMERICAN EXPRESS

1110 NASA Rd. 1 #306
Houston, Texas 77058

Prices and specifications subject to change. All trademarks are registered trademarks of their respecti companies. Returns must be in new condition, and ma be subject to restocking fee. Shipping is not refundabl

Circle 245 on reader service card

ProDirect

Professional Service... Products Direct

- MOST ORDERS SHIPPED SAME DAY.
- NO SURCHARGE ON CREDIT CARDS.
- NO OUT OF STATE SALES TAX COLLECTED
- 30 DAY MONEY BACK GUARANTEE ON ALL DRIVE PRODUCTS.

SPRING FEVER
Quantum 1800 .....Only $995
Micropolis 1.7 GB AV .....Only $1115

Quantum *Best Byte for MACs!*

New Product

Capacity	Seek	RPM	Disc Cache	Int	Ext
LPS 170 MB	12MS	4500	128K	199	259

3.5" LOW PROFILE, LOW POWER DRIVES

LPS Series

Capacity	Seek	Int.	Ext.
240 MB	10ms	245	305
270 MB	10ms	CALL	CALL
340 MB	10ms	285	345
540 MB	12ms	420	485

LPS and ELS series includes a 2 year warranty.

GO Drive Series

Capacity	Seek	Int.	Ext.
42 MB	17ms	99	155
127 MB	17ms	230	315
170 MB	17ms	255	335
256 MB	17ms	345	425

Empire and Pro Series

Capacity	Seek	RPM	Disc Cache	Int	Ext
540 MB	9.5ms	5400	512K	$545	605
1080 MB	10ms	5400	512K	775	835
New Price! 1800 MB	10ms	4500	512K	995	1055

Includes 5 year factory warranty

Seagate

Capacity	Model	Size	Access	RPM	Disc Cache	Int	Ext
1.2 GB	ST31200N	3.5	10ms	5400	256K	$775	$835
1.9 GB	ST11950N	3.5"	8ms	7200	1024K	1485	1545
2.4 GB	ST 12550N	3.5"	8ms	7200	1024K	1725	1785
4.2 GB	ST15150N	3.5"	8ms	7200	1024K	Call	Call
3.4 GB Elite 3	ST 43400N	5.25"	10ms	5400	512K	2125	2225
9 GB Elite 9	ST 410800N	5.25"	11ms	5400	512K	CALL	CALL

All Seagate drives come with a 5 year factory warranty and are backed by a 30 day money back guarantee. External drives come with a double shielded system cable and external termination. All advertised models are SCSI 1 & 2 compatible.

MICROPOLIS

Capacity	Model	Size	Access	RPM	Disc Cache	Int.	Ext.
1.2 GB	M4110	Low Profile	8 MS	5400	256K	$795	$855
1.2 GB	M2210	3.5"	10 MS	5400	512K	795	855
New Price! 1.7 GB	M2217	3.5"	10 MS	5400	512K	1055	1115
2.4 GB	M1926	3.5"	11 MS	5400	256K	1420	1520
3.6 GB	M1936	5.25"	11 MS	5400	256K	2135	2195
	Direct to Disk Recording AV Drives						
1.2 GB	M2210AV	3.5"	10 MS	5400	512K	860	920
New Price! 1.7 GB	M2217AV	3.5"	10 MS	5400	512K	1115	1175
3.6 GB	M1936AV	5.25"	11MS	5400	512K	2185	2285

All drives come formatted and packaged with the latest SCSI Manager 4.3 compatible driver software. External drives come with a double shielded system cable and external termination.

- Transfers up to 10mb/sec.
- Fast SCSI-2
- 5 Year (HOT SWAP) Warranty
- 300,000 Hours MTBF
- COMES WITH QUADRA AV

SyQuest

Capacity	Model	Seek	RPM	Buffer	Int	Ext
44MB	SQ555	20ms	3200	8K	249	309
88 MB	SQ5110C	20ms	3200	32K	379	439
NEW! 105 MB	SQ3105	14.5ms	3600	64K	319	379
270 MB	SQ3270	13.5ms	3200	128K	619	659

One FREE Cartridge Included with all SyQuest Products!

Removable Media		Price
44 MB	SQ400	$59
88 MB	SQ800	89
105 MB	SQ310	59
200 MB	SQ2000	99

All SyQuest cartrideges come with 5 year warranty. ProDirect, Inc. offers a 30 day money back guarantee. All drives include a FREE copy of Anubis Formatting Software.

FUJITSU

Capacity	Model	Access	RPM	Disc Buffer	Int	Ext
240 MB	M2637, 2.5"	14ms	4500	128K	$335	$435
520 MB	M2624 F/A	9ms	4500	512K	$565	$605
1.2 GB	M2694ESA	8.5 ms	5400	512K	$795	$855

DynaMO128 128 MB — Dyna MO 30 ms, 3600 RPM, SCSI-2 — $865

HEWLETT PACKARD

Capacity	Model		Int.	Ext.
1.2 GB	C2247	3.5"	$995	$1055
2.4 GB	C2490	3.5"	1995	2055
2.35 GB	C3010	5.25"	1975	2075
Optical Drives				
1.3 GB MO	C1716T	23.5ms	2599	2699

Memory Products

Memory		Centris, LCIII & Quadra	
2x8x80	40	4 MB -70 ns/ 4 MB ns	145/155
4x8x80	145	**8 MB -70 ns/ 8 MB ns**	295/305
4x8x80(FX)	150	16 MB 70 ns	605
16x8x80(Low Profile)	625	32 MB -60 ns	1295
16x8x80 (FX)	619	**VRAM**	
All memory has a lifetime warranty!		Video RAM 256K/512K	20 / 38

TAPE BACKUP DRIVES

Capacity	Model	Media	Int.	Ext.
2.0 GB	HP35470A	4mm	$1025	$1045
3-5 GB	HP35480A	4mm	1199	1219
4-10 GB	HP1533A	4mm	1565	1585
20-50 GB	HP1553A & Auto Tape Loader		3495	3595
2-5 GB	Exabyte 8205	8mm	1599	1625
5-10 GB	Exabyte 8505	8mm	2549	2569
20-50 GB	Exabyte 10i	Auto Tape Loader	CALL!	

ProDirect tape backup systems include Retrospect backup software. Drives come with media.

QMS PRINTERS

Model — Price

PS 410 4PPM,300DPI — $1399
2 MB, Hot Ports, PS L1 & HP-PCL, 45 Fonts

***PS 860 8PPM, 600 DPI, 11x17** — $3825
12 MB exp. 32 MB,39 Fonts, PS L 1& 2, RISC Processor

PS 1725 17PPM, 600 DPI, *New Price ! — $4399
8 MB Exp. to 32 MB, PS Level 1 & 2, RISC Processor

*Network interfaces available for Ethernet/Talk,Token Ring for Netware,TCP/IP, DECnet, Emulation for DEC LN03, CCITT Group IV.

EXTERNAL CABINETS

ZERO FOOTPRINT — $75
40 watt shielded power supply, 110/220 VAC. Works with all 3.5" and 5.25" HH Drives.

MICROCAB Vertical Standing — $89
110/220 VAC. Works with any 3.5" Drive.

FULL HEIGHT — $139
68 watt shielded power supply, 110/220 VAC. Works with all 5.25" Drives.

Multi Bay Cabinet — $CALL
Two, Four, Six, and Eight Bay Cabinets available. CALL FOR QUOTE. All cabinets come with a 25-50 pin Mac system cable. One year warranty on all cabinets.

800-524-9952

Fax 24 Hrs. a Day 612-941-1109

Fax International Orders 612-929-2421 • Call: 612-941-1805

Business Hours: 8:00am to 7:00pm M-F (CST.)

- Dealer Inquiries Welcomed
- Volume Discounts Available
- P.O.'s Welcomed - Educational, Government, Corporate
- Please Specify For: Mac, HP Workstation, SUN Sparc or IBM RS6000

ProDirect
6824 Washington Ave. S.
Minneapolis, MN 55344

VISA MasterCard

Prices & Specifications subject to change. All trademarks are registered trademarks of their respective companies. Freight not refundable.

Circle 135 on reader service card

MacWAREHOUSE®

SPECTACULAR SUPER SAVERS!

HP DeskWriter

BLOWOUT!

This personal inkjet HP Deskwriter model # 2279A printer gives you superior, water-resistant, 300 dpi black printing on plain paper. Print up to three pages per minute, with 35 built-in fonts, and 256 levels of grayscale for great graphics. Includes easy-to-use and install font & driver software and a spooler so you can get on with the rest of your work while you're printing!

Manufacturer: Hewlett Packard
INP 0318

(while supplies last)

$199

Adobe Illustrator™ 5.5

Dreaming about a more powerful drawing tool? It's here! A major release of the world's leading illustration and design software, Adobe Illustrator™ 5.5 for Macintosh gives graphic artists and enthusiasts, technical illustrators and desktop publishers, a host of new features that users of other drawing programs can only imagine. Includes: Adobe Acrobat™ Exchange and Adobe Acrobat Distiller™ software, so you can import printable documents from your favorite applications. An expanded Pathfinder feature addresses trapping. New text features provide tabs, search and replace by font, a spell checker, rows and columns, and more!

Publisher: Adobe GRA 0772

$389

AstroChase 3D

The Earth is under attack! Report to your Ultraship to help destroy the deadly Mega Mines. But beware, the enemy fighters are out there too, and they'll ram you if they can't shoot you down first. These brilliant 3D graphics make this a game you, and Earth, will never forget!

Publisher: MacPlay
ENT 0703

$35

White Knight

Award-winning telecommunications program–perfect, low-cost solution to every Mac telecommunicator's needs. Offers power associated with products costing hundreds more, yet it's far more flexible and easier to learn. Proclaimed as a precision communications tool by *MacWorld*.

Publisher: FreeSoft
COM 0060

$85

Word For Word

Convert over 100 DOS, Windows & Mac documents. Retain features, convert characters & graphics and more! COM 0226

$99

Publisher: Mastersoft

DocuComp II 1.07

Revise documents with ease! Compare files, scroll through them in synch, merge them and more!
DTP 0081

$119

Delrina Fax PRO for Macintosh

Delrina Fax PRO for Macintosh lets you conveniently send faxes directly from your Mac without running to your fax machine. Advanced document management tools let you file, track and quickly find faxes.

Publisher: Delrina
COM 0197

$89.95

Newton MessagePad 110

The incredible new technology you've been waiting for is here! Apple's Newton MessagePad 110 is a communications assistant that helps you stay in touch with the world, organize your life, and keep track of your ideas. Because it is designed to know how you work, it actually acts as your assistant.

Manufacturer:
Apple Computer, Inc
PDA 0029

$599

Opus 'n Bill Screen Saver

Screen savers have been known to be funny, but now there's one with an attitude. Introducing **Opus 'n Bill Screen Saver** from Delrina. Let Opus and Bill protect you and your monitor from boredom. Windows and Mac. *Publisher:* Delrina
UTI 0446

$29.95

QuarkXPress 3.3

Unequaled design flexibility and more color/graphics support make QuarkXPress 3.3 the choice for design-intensive page layout. Create variable-shaped text boxes-even circles and polygons. Version 3.3 adds spot colors imported from EPS files to the Colors list and incorporates Toyo and DIC spot-color inks. Import JPEG and PCX graphics directly into Quark documents, apply shading to gray elements of grayscale TIFFs, de-select all active picture and text boxes by pushing a button, and much more!

Publisher: Quark
DTP 0110

$589

Eco-Adventures: In the Oceans

EDU 0337

Eco-Adventures: In the Rainforest

EDU 0336

Publisher: Chariot Software

$35 ea.

Aldus Paint & Publish

Get Aldus SuperPaint 3.5, the most versatile graphics toolkit in the business, **AND** Aldus HomePublisher, the complete home or office publishing solution, for one low price!

Publisher: Aldus
GRA 0757

$89

MicroGrade

EDU 0340 **$55**

MicroTest III 4.0

EDU 0341

Publisher: Chariot Software

$85

SIMMs HOTLINE

1-800-659-0222

MacWAREHOUSE

Call the SIMMs HOTLINE for answers to your SIMMs questions or to place your SIMMs order.

Microsoft Office -with FREE F/A-18 Hornet Strike Fighter Simulation

A family of programs designed to work together-allowing you to focus on your work, instead of your computer! Includes: **Word 5.1**-the updated version of the most popular word processor for the Mac; **Excel 4.0**-the incredibly powerful spreadsheet; **PowerPoint**-with advanced text and sophisticated presentation capabilities; and a single workstation client license for **Microsoft Mail***-the high-performance, easy-to-use electronic mail program. **Order today and get F/A-18 Hornet Strike Fighter Simulation FREE!** F/A-18 Hornet shipped in promotional package. Available while supplies last. *Publisher:* Microsoft
BND 0349

$475

**(No software included. Microsoft Mail license allows you to make and use one copy of the workstation disk included with Microsoft Mail Server. You must currently own Microsoft Mail Server or purchase it separately.)*

Now Contact/ Now Up-to-Date Bundle

Get a full-featured contact manager AND an event scheduler at one low price!

Publisher:
Now Software, Inc.
BUS 0367

$99.95

Apple Personal Diagnostics

The most complete and easy-to-use diagnostic software for your Mac. Keep your Mac trouble-free by checking and reporting on the well-being of your computer's logic board, disk drives, display and system software. Diagnostics constantly monitor your computer and alert you **BEFORE** problems arise. *Publisher:* Apple Computer, Inc
UTI 0514

$99.95

1-800-255-6227

Overnight Delivery-Only $3.00

Power User Double Speed CD-ROM DRIVE Only $199

For a Limited Time...



Order your Power User CD-ROM Drive now for only $199 and, for only $9.95 more, we'll include your choice of any ONE of these popular chart-topping CDs: *The BodyGuard* soundtrack with Whitney Houston; Billy Joel's *River of Dreams*; Sting's *Ten Summoner's Tales*; or *Music Box* by Mariah Carey!



Your Choice Only $9.95 *

Plays your music CDs, too!

HURRY, quantities are limited!

Power User Double Speed CD-ROM Drive
Ask for item# BND 0316 ..... $199

**PLUS*, for only $9.95, choose ONE of the following music CDs (limit 1 per customer):*

- ❑ Item# AAP 0002 *Whitney Houston-The Bodyguard*
- ❑ Item# AAP 0003 *Billy Joel-River of Dreams*
- ❑ Item# AAP 0004 *Sting-Ten Summoner's Tales*
- ❑ Item# AAP 0005 *Mariah Carey-Music Box*

The New Grolier Multimedia Encyclopedia *PLUS* The Animals! **FREE**, Atlas Pack **FREE**! and the American Heritage Talking Dictionary **FREE**!

Ask for item# BND 0364 ..... $99*

** When you order the Power User CD-ROM Drive at the same time.*

Get the entire 21-volume Grolier Encyclopedia on ONE CD-ROM!

PLUS... for only $99! *



Buy now and also get 3 BONUS CD-ROMs FREE!



THE Mac SUPERSTORE

BUSINESS & PRESENTATION

A LASTING IMPRESSION
ResumExpert (Full line available) ..... ea. 59.
ALDUS
BUS0298 DateBook Pro ..... 49.
DAT0104 TouchBASE Pro ..... 49.
CLARIS
DAT0112 FileMaker Pro. 2.1 ..... 269.
INTUIT
FIN0201 Quicken 4.0 ..... 44.95
LOTUS DEVELOPMENT CORPORATION
BUS0188 Lotus 1-2-3 for Macintosh 1.1 ..... 299.
MICROSOFT
BUS0223 Excel 4.0 ..... 295.
BUS0181 Project 3.0 ..... 445.
BND0349 Office 3.0 w/ F/A-18 Hornet ..... 475.
BUS0269 PowerPoint 3.0 ..... 295.
WRD0059 Word 5.1 ..... 295.
BESTIWARE
FIN0212 M.Y.O.B. 4.0 w/o Payroll 59.95
FIN0213 M.Y.O.B. 4.0 w/ Payroll 109.95
WORDPERFECT CORPORATION
WRD0068 WordPerfect 3.0 w/FREE Grammatik ... 299.95

COMMUNICATIONS & NETWORKING

ADOBE
COM0171 Adobe Acrobat Starter Kit ..... 669.
APPLE COMPUTER, INC.
NET0250 AppleShare 3.0.1 ..... 969.
COM0211 Apple Remote Access ..... 189.
COM0126 Macintosh PC Exchange 59.95
DAYNA COMMUNICATIONS, INC.
NET0358 EtherPrint-3 Plus ..... 449.
FARALLON™ COMPUTING
NET0007 PhoneNET® Plus, SE & II 29.95
GLOBAL VILLAGE (FULL LINE AVAILABLE)
PowerPorts ..... Call.
HAYES
MOD0130 ACCURA 144+Fax 144 ..... 169.95
MOD0129 ACCURA 96+Fax96 ..... 159.95
INSIGNIA (FULL LINE AVAILABLE)
UTI0433 AccessPC 3.0 ..... 89.95
POWERUSER®
MOD0116 14.4 Send/Receive Fax Modem 189.95
SHIVA
NET0246 LANRover/L ..... 599.
ZOOM TELEPHONICS
MOD0109 VFX V.32bis MacPack 169.95

EDUCATIONAL & ENTERTAINMENT

BRODERBUND
GRA0268 Kid Pix 1.2 ..... 35.
NORDIC SOFTWARE
EDU0051 MacKids Turbo Math Facts 2.0 ..... 25.
PERSONAL TRAINING SYS.(FULL LINE AVAILABLE)
Excel 4.0, Word 5.1, Filemaker Pro 2.0 ..... ea. 49.
THE SOFTWARE TOOLWORKS
BND0169 Miracle Piano Bundle ..... 269.

GRAPHICS & DESIGN

ADOBE SYSTEMS, INC. (FULL LINE AVAILABLE)
GRA0772 Illustrator 5.5 ..... 389.
GRA0430 Photoshop 2.5.1 ..... 559.
ALDUS
GRA0654 FreeHand 4.0 ..... 389.95
GRA0757 Paint & Publish ..... 89.
DTP0088 PageMaker 5.0 ..... 579.
UPG0032 PageMaker 5.0 Upgrade ..... 149.
APPLE COMPUTER, INC.
GRA0347 QuickTime Starter Kit ..... 79.
CLARIS
GRA0350 MacDraw Pro 1.5 ..... 269.95
RAY DREAM
GRA0605 Ray Dream Designer 3.0 ..... 249.95
QUARK, INC.
DTP0110 XPress 3.3 ..... 589.
SOFTKEY SOFTWARE
FON0480 KeyFonts ..... 49.

INPUT & OUTPUT

CAERE
INP0289 OmniScan ..... 309.
KENSINGTON
INP0231 Turbo Mouse (SE or II) 4.0 ..... 109.
MICROTEK (FULL LINE AVAILABLE)
INP0246 Microtek ScanMaker II ..... 699.
MOUSE SYSTEMS
INP0132 Little Mouse ADB ..... 74.
SUPERMAC
MON0053 SuperMatch 20+ Color Display ..... 1799.

POWERBOOK PRODUCTS

BATTERY TECHNOLOGY INC.
ACC0840 Battery for Powerbook 59.95
KENSINGTON
INP0221 Notebook Keypad ..... 79.
SOPHISTICATED CIRCUITS
INP0232 Powerpad 69.95

UPGRADES & DRIVES

DAYSTAR DIGITAL
DRI0469 Universal PowerCache 33 MHz ..... 299.
DRI0806 20 MHz Turbo 040i Accelerator ..... 499.
PERIPHERAL LAND, INC.
DRI0615 Infinity 88/RW44 ..... 559.95
POWERUSER®
CHP0011 4 Meg SIMMs 80ns ..... Call.
CHP0013 1 Meg SIMMs 100ns ..... Call.
BND0176 44/88C MB SyQuest w/ cartridge ... 429.95
BND0094 44MB SyQuest w/ cartridge 279.95

UTILITIES & PROGRAMMING

ALADDIN SYSTEMS
UTI0302 StuffIt Deluxe 3.0 ..... 69.
APPLE COMPUTER, INC.
SYS0004 System 7.1 Personal Upgrade Kit 59.95
SYS0010 At Ease 2.0 ..... 45.95
CAERE
UTI0293 OmniPage Direct 99.95
MICROMAT COMPUTER SYSTEMS
UTI0285 MacEKG 2.0 ..... 89.
SYMANTEC CORPORATION
UTI0151 Norton Utilities for the Mac 2.0 ..... 95.
UTI0334 Symantec Antivirus 3.5 (SAM) 65.95

I'm Kerry, call me at:

1-800-255-6227

(1-800-ALL-MACS)

Call 24 hours a day, 7 days a week.

Inquiries: 908-367-0440 FAX Your Order to: 908-905-9279

Compuserve Code: GOMW

NEW! Express Customer Service Number:
1-800-925-6227



MacWAREHOUSE®

1720 Oak Street, P.O. Box 3031, Lakewood, NJ 08701

©1994 Micro Warehouse Inc.



- All major credit cards accepted. No surcharge.
- Your credit card will not be charged until your order is shipped.
- If we ship a partial order, we pay the freight on the remaining portion.
- All U.S. shipments are insured at no extra charge.
- C.O.D. orders accepted (add $6.00 including shipping)-$1,000 maximum.
- All products are covered by a 120-day limited warranty. Defective software replaced immediately. Hardware replaced or repaired at our discretion.
- Some products may have system requirements. Call for details.
- **Sales tax:** CT residents add 6%, NJ residents add 7%, Ohio residents add appropriate tax.

SHIPPING

- All orders add $3.00 per order. We ship Airborne Express overnight unless UPS Ground delivers overnight. (Some rural areas require an extra day.)
- Orders placed by 12:00 MIDNIGHT (EST) (weekdays) for "in-stock" items ship same day (barring system failure, etc.) for overnight delivery.
- C.O.D. orders ship via UPS (Blue Label if you are more than 2 days from us via UPS Ground). Charge is $6.00 including shipping.
- Alaska, Hawaii, outside continental U.S., APO/FPO call 908-367-0440 for information. Some products are not available outside the U.S.

- We regret that we cannot be responsible for typographical errors.
- For faster service for existing customers, our computers recognize incoming calls by the telephone number and instantly locate your records.

©Copyright 1994 MicroWarehouse, Inc. MacWAREHOUSE® is a division of MicroWarehouse, Inc. MacWAREHOUSE® and MicroWarehouse® are registered servicemarks of MicroWarehouse, Inc. Item availability and price subject to change without notice. Apple, the Apple logo, Mac and Macintosh are registered trademarks of Apple Computer, Inc.

Circle 150 on reader service card

FREE CATALOG SUBSCRIPTION **MW0794**

Check the appropriate box(es) to receive your FREE 1-year subscription and mail this coupon to:
1720 Oak Street, P.O. Box 3031, Lakewood, NJ 08701

Name _____

Address _____ Apt. _____

City _____ State _____ Zip _____

(Expect to receive your first issue within 4-6 weeks).

❑ MacWAREHOUSE® ❑ Data Comm WAREHOUSE™
❑ MicroWAREHOUSE® ❑ CD-ROM WAREHOUSE™

The Mac Zone™ Established 1986
Your Catalog SuperStore

CALL YOUR CATALOG SUPERSTORE:
1•800•436•0606

BEST-SELLING MULTI-MEDIA CDs & HARDWARE

$51.98
Myst CD-ROM




On the island of Myst, you explore eerie worlds of starkly fantastic beauty as you attempt to unravel a chilling tale of intrigue and injustice. Broderbund *#97733*

$48.98
The Journeyman Project

This amazing photorealistic 3D ride through time includes over 30 minutes of QuickTime video and a totally original music score. Presto Studios *#06070*

$48.98
Xplora 1: Peter Gabriel's Secret World

Experience the life of a rock star! Get a behind-the-scenes look at how music is made as Peter Gabriel guides you through his Secret World. Mac Play *#97149*

$44.98
The C.H.A.O.S. Continuum


It's the year 2577. The Titan Colony is being held captive by an orbiting supercomputer known as C.H.A.O.S. Can you save the colony? Creative Multimedia Corp. *#97738*

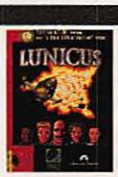
$42.98
Darkseed CD


In this intriguing multimedia saga, you control the fate of two worlds as you wander through a dark and dying civilization. Sony Imagesoft *#97167*

$61.98
Iron Helix




Iron Helix is a science fiction thriller that immerses you in a virtual reality of neo-gothic surrealism. Includes a fast arcade game pace. Spectrum Holobyte *#06852*

$39.98
Lunicus


In an attempt to save earth, you battle mechanized aliens in fully rendered 3D environments that are packed with danger and excitement. Cyberflix *#97146*

$49.98
RedShift Multimedia Astronomy


The world's most realistic space simulation software! Can accurately simulate astronomical events over 15,000 years. Maris Multimedia *#97138*

$47.98


Microsoft Cinemania CD-ROM


From classic to contemporary films, this is the best way to see and hear reviews and biographies, faces and voices, scenes and music. Microsoft *#99702*

$39.98
Jump Raven

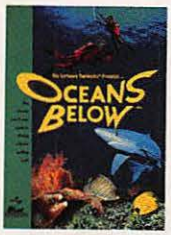
When Skin Heads hijack the only surviving genetic samples of Earth's wildlife, it's up to Jump Raven to get them back. Cyberflix *#97127*

$52.98
7th Guest


Henry Stuaf's mansion now stands rotting and empty – ever since the children started dying after the six guests came. And you are the 7th guest. Virgin Games *#99236*

$24.98
Instant Access to Entertainment CD

This new medium for software distribution gives you everything you need to find, try and buy Macintosh software – direct from your desktop. *#99695*

Best Travel CD – March 1994 Macworld
$29.98
Oceans Below


Discover the world of scuba divers in this exciting new interactive multimedia experience! It will introduce you to a variety of equipment components and underwater environmental factors. It even provides a map of exotic locations so you can choose your ideal dive sites. Learn about local sealife with photos and video clips. The Software Toolworks *#99390*

Proceed at your own risk!
$39.98
Maniac Sports


Experience some of the most extreme, dangerous, and thrilling "sports" known to humanity…if you dare! Participate in nine exhilarating and terrifying adventures including: sky diving, surfing, skateboarding, bungee jumping, extreme skiing, rock climbing, mountain biking, windsurfing, and white water kayaking. The Software Toolworks *#97248*

The most versatile CD-ROM drive yet
$299.98
Reno Premium Portable CD-ROM

Until now, you've had to buy a separate CD-ROM player for every computer you own. One for the office. One for the home. And in between or on the road? Forget it. Now Media Vision has changed all that. Introducing Reno, the most versatile CD-ROM drive ever. This powerful, portable unit can keep up with you whether you're running the most demanding application from your desktop PC, or on the road miles from the nearest AC outlet. Reno delivers double-speed transfer rates, Photo CD multi-session compatibility, 180ms access time, audio CD playing capability, and a standard SCSI 2 interface – all in a sleek, stylish package. Reno is backed with a one-year warranty. And all Media Vision products are backed with unlimited toll-free technical support, available seven days a week. Includes headphones and battery pack. Media Vision *#97987*

Dual amplified stereo speakers
$49.98
Koss HD/4 CSS Computer Speaker Combo Pack

The Koss HD/4 CSS Computer Speaker Combo Pack features the HD/4 dual amplified stereo speakers with master volume control and 3-band stereo equalizer, the COM/10 speaker hanger and a 6 volt AC adapter. Lifetime warranty. Koss *#14715*

Versatile, multiple-function joystick
$109.98


Flight Control System
The Flight Control System uses Thrustmaster's multiple function joystick technology, providing a versatile accessory to your game playing. This joystick utilizes four buttons and a four-way hat switch. It gives you true HOTAS™ flight (Hands On Throttle and Stick). And it can work as a two-button joystick on all games. The Flight Control System offers you durable pots – it's factory tested and certified for longevity. Supported and endorsed by leading software companies. Thrustmaster *#95201*

MW007 PLEASE USE THIS CODE TO RECEIVE THESE SPECIAL PRICES
Circle 70 on the reader service card

CORPORATE SALES: 1-800-258-0882
GOVERNMENT SALES: 1-800-372-9663
EDUCATION SALES: 1-800-381-9663

CALL YOUR CATALOG SUPERSTORE:

1•800•436•0606

BEST-SELLING MULTI-MEDIA CDs & HARDWARE

The Mac Zone™ — Established 1986 — Your Catalog SuperStore

Meets the needs of today's powerful CD-ROM applications

$599.98 NEC MultiSpin 3Xe External CD-ROM Reader

- Kodak Photo CD ready
- 195ms average access time
- 450K per second performance
- 256K cache flow for smooth animation and sound



NEC's MultiSpin family of CD-ROM readers give you advanced technology that is easy to use. The 3Xe has a revolutionary design with front panel LCD display to show real-time performance and diagnostic information. And its one-touch rotating double dust door & automatic lens cleaning system provides maximum dust protection. It also plays your music CDs. NEC *#97814*

#97815	NEC MultiSpin 3Xi Internal CD ROM Reader	$499.98
#97816	NEC MultiSpin 3Xp Personal CD ROM Reader	$449.98
#96658	NEC MultiSpin 3Xp (Granite Grey) CD ROM Reader	$449.98
#97817	NEC MultiSpin 4X Pro CDR-900	$969.98

Essential software products that work the way you work

$474.98 Microsoft Office 3.0 CD-ROM



Use Microsoft Word to write memos, documents, and reports; Microsoft Excel to create stunning spreadsheets, crunch numbers, analyze data and predict trends; and Microsoft PowerPoint to create persuasive visual presentations with graphics that will impress and astound any audience. Also includes a single workstation license for Mail. (Requires Microsoft Mail for Networks, server version.) Microsoft Corporation *#M 03233*

PLUS FREE With the purchase of Microsoft Office 3.0, you get a FREE ticket to jump into the cockpit of the F/A-18 Hornet and dogfight with the enemies of freedom. Just ask for special item *#96279*. SRP of $79.95



WHILE SUPPLIES LAST

$35.98 The Animals!



A true multimedia experience from the experts at the world-renowned San Diego Zoo! The Software Toolworks *#99388*

$88.98 Incredible Image Pak



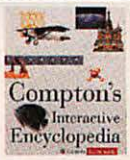
A treasure chest of more than 2000 all-new full color images for your publications! Comes with 40 FREE fonts! T/Maker *#99555*

$148.98 PhoneDisc Reverse



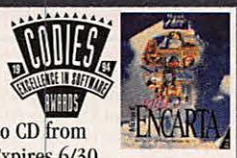
Conveniently track down businesses and people with over 90 million listings on five completely indexed CDs. Digital Directory *#97166*

$94.98 Compton's Interactive Encylopedia



Stimulate your mind with the encyclopedia that sparks interest and feeds curiosity! Compton's Interactive *#97716*

$84.98 Microsoft Encarta 1994



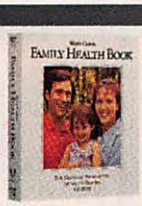
Exciting multimedia learning! With FREE Photo CD from Seattle Software Group. Expires 6/30 or while supplies last. Microsoft *#95750*

$118.98 Berlitz Think and Talk French CD-ROM



Learn French in 30 days with the world's most successful language program or your money back! Hyperglot *#05438*

$39.98 Mayo Clinic Family Health Book



Information on over 1000 medical conditions, first aid, prevention and more on CD-ROM.
IVI Publishing *#98327*

$2.95 With any purchase from The Mac Zone — Adobe Type on Call 3.0 CD-ROM



$64.98 Value

Your choice of 1700 Adobe typefaces at special discount prices is a phone call away!
Adobe Systems *#98097*

$75.98 Total History



Everything you need for the home history reference library in one outstanding CD-ROM threesome.
Bureau of Electronic Publishing *#97121*

$49.98 Xplorations



100 computer-generated images on CD-ROM for use in multimedia, video, slides, and 3D rendering.
XPLORE *#98362*

$29.98 Corel Professional Photo CD Sunsets & Sunrises



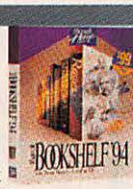
Includes 100 Kodak Royalty free images. Over 140 titles to choose from.
Corel Corp. *#13215*

$68.98 CorelSCSI Software



A toolbox of everything you need to diagnose, repair, and maintain your SCSI devices – on a single workstation or AppleShare file server. Corel Corp. *#06984*

$58.98 Microsoft Bookshelf 1994 CD-ROM



This essential desktop reference library includes seven different source guides. Includes lightning-fast search capabilities. Microsoft *#99701*

INTERNATIONALLY

Middle East – 971 4 370 070	Fax: 971 4 374 103	France – 33 14688 4840	Fax: 33 14790 6903	United Kingdom – 44 483 211456	Fax: 44 483 211 567	Portugal – 351 1 387 4548	Fax: 351 1 386 3801	Hong Kong – 852 851 1750	Fax: 852 581 8359
Indonesia – 62 21549 5180	Fax: 62 21530 4715	Germany – 49 40551 6066	Fax: 49 40 551 2151	Switzerland – 411 401 4078(71,72)	Fax: 411 401 4073	Mexico – 525 611 4646	Fax: 525 611 0694	Japan – 81 3 5454 7230	Fax: 81 3 5454 7212

- All major credit cards accepted. No surcharge.
- Credit card not charged until order is shipped. If we must ship a partial order, freight is not charged on back order (USA only).
- Most personal and company checks received by mail clear immediately. All checks or purchase orders must have a phone number and contact person listed.
- A $20 fee will be charged on all returned checks.
- C.O.D. orders accepted: Limit $1,000 per order. Cashier's check only. Add $5 per C.O.D. order.
- Educational, government and corporate purchase orders accepted.
- Most products covered by 120-day limited warranty.
- No sales tax, except applicable sales tax in WA and OH.
- Prices and product availability subject to change without notice. All specials and promotions limited by availability. Call for current prices.
- All shipments refer to items in stock, barring system failure, etc.
- Shipping: ?3 per order for delivery in the USA via Airborne Express overnight service. (Some rural areas require extra day for delivery). Canadian customer orders, in most cases, delivered within 24 hours. Call for complete information.

All U.S. shipments insured at no extra charge.

- APO/FPO box orders shipped first class U.S. Mail. Shipments to P.O. Boxes via UPS.
- Orders placed by 2 a.m. ET weekdays ship that day.
- Orders placed Saturday by 9 p.m. ET ship to arrive Monday.
- Competitive upgrades require proof of purchase of qualifying software.
- Not responsible for typographical errors.
- **Most defective software replaced immediately. Most hardware repaired or replaced at our discretion.**
- **Return Authorization Number must be obtained prior to returning any item. Call Customer Service Hotline: 1-800-248-9948 weekdays 6 a.m. to 6 p.m. PT, 9 a.m. to 9 p.m. ET.**

The Mac Zone • 17411 NE Union Hill Road • Redmond, WA 98052-3373
International: 206-883-3088 FAX: 206-881-3421

©1994 Copyright Multiple Zones International, Inc. All rights reserved.
Unauthorized duplication is violation of applicable laws.

☐ **YES! PLEASE START MY 1-YEAR MAC ZONE CATALOG SUBSCRIPTION AS SOON AS POSSIBLE.** Expect your first issue in 4-6 weeks

Name _____

Address _____ **Apt** _____

City _____ **State** _____ **Zip** _____

Mail to: The Mac Zone, 17411 N.E. Union Hill Road, Redmond, WA 98052-6716 **MW007**

PRODUCT INDEX
BUSINESS TOOLS

Macworld SHOPPER®

PRODUCT INDEX

Category	Page No.
ACCESSORIES	**267**
Cases	
Covers	
Diskettes	
Furniture	
Security Systems	
Serial Switches	
Trackballs	
PowerBook	
BUSINESS TOOLS	**238-240**
Bar Code	
Credit Authorization	
Point of Sale	
Property Management	
Translation	
EDUCATIONAL & RECREATIONAL	**260-261**
Astrology	
Astronomy	
College Guide	
Degree Programming	
Discount Software	
Flashcards	
Games	
Genealogy	
Grading	
Music	
Religion	
GRAPHICS	**264-265**
3D	
CAD/CAM	
Clip Art	
Fonts	
Graphics Translators	
MOBILE COMPUTING & PDA's	**260**
Battery Charger	
PowerBook Accessories	
Security	
Supplies	
MULTIMEDIA & CD-ROM	**261-263**
Cooking	
Maps	
Presentation	
NETWORKING & COMMUNICATIONS	**265**
BBS	
PROGRAMMING & UTILITIES	**265**
Data Compression	
Languages	
SERVICES & SUPPLIES	**266-267**
CAD/CAM	
Computer Insurance	
Computer Repair	
Consulting	
SERVICES & SUPPLIES (continued)	
Data Recovery	
On-Line Services	
Printer Supplies	
Slides	
SPECIALIZED MARKETS	**265**
Languages	
Manufacturing	
Medical	
Real Estate	
Shareware	
SYSTEMS & PERIPHERALS	**240-254**
Printers	
UPGRADES & MEMORY	**255-259**
Accelerators	
Sound	

ACCOUNT MANAGERS: 800.888.8622
Carol Johnstone 415.978.3152
Shannon Smith 415.974.7414
Niki Stranz 415.978.3105

DIGITAL AD COORDINATOR:
Clayton Haberman 415.978.3132

SYNEX **BAR CODE PRO™**

"Installs in 60 sec. and takes less than five minutes to master" — MacWorld !

Bar Code Pro™ creates color EPS or PICT graphics for use with Quark™ or PageMaker™ (to name a few) for packaging, coupons, CDs, labeling, libraries, inventory, or publishing. Versions: UPC (A), UPC (E), Code 39, EAN, EAN-128, ISSN, ISBN, POSTNET, FIM, Code 128, Codabar, MSI/Plessey, ITF, Pharmacode

ALL NEW VERSION 2.0

0 012345 7

(800) 447-9639
FAX: (718) 768-3997

INTERNT'L CALL: (718) 499-6293

CIRCLE 441 ON READER SERVICE CARD

The Recognized Macintosh Bar Code Experts

AMERICAN EXPRESS · MasterCard · VISA · A MEMBER OF AIM USA

UniScan-300 ADB Bar Code/Mag Stripe Reader $369
(Industry's only lifetime warranty)
Complete with wand & bar code printing software
Compatible with all Macs from 128K to current models.
Inventors of keyboard interface bar code reader for Macintosh.

PDCS-300 Portable System *(1 year warranty)* $999
Includes wand, communications software, cable, battery & AC adapter.
256K storage (128K RAM & 128K Flash EPROM) upgradeable to 1 meg.
Data collection program included - Inexpensive program generator

30-Day Money-Back-Guarantee on All Products
Established 1978 · Newton Scanners and Software Available Now!
Discounts for Resellers, Schools, Non-Profit & Government Agencies

TPS Electronics
2495 Old Middlefield Way, Mtn. View CA 94043
(415) 988-0141 Fax (415) 988-0289
(800) 526-5920 AppleLink: BARCODE

CIRCLE 450 ON READER SERVICE CARD

Label Press
Label Printing Software Tamed!



Introducing the most sophisticated, easy-to-use, bar code label printing utility ever. **Label Press** includes hundreds of Avery templates and industry standards such as KMart, JCPenney, UPS, Fed EX and many more. For any Mac compatible printer.

For industrial label printing **Label Press Thermal** Works with all Intermec, Fargo Datamax, and Zebra printers.

SYNEX (800) 447-9639

CIRCLE 466 ON READER SERVICE CARD



POINT OF SALE
INVENTORY CONTROL
• Retail
• Manufacturing
• Educational
• Service Industry
• Vertical Markets

Bar-Code Readers from $289.00
3" CCD w/Internal Decoder - Only $389.00
Receipt Printers • Cash Drawers
Credit Card Auth. • Port. Data Collection
UPS Manifest SW • Accounting
call or fax for a FREE CATALOG
(800) 622-7670
(618) 985-8237 TEL • (618) 985-3014 FAX
Dealer Inquiries Welcome
30 day MBG
P.O.S. DIRECT

Mac Landlord $399
Upgraded version 2.2 now available. Still the Easiest-to-use property management program for multiple properties & unlimited units. Includes tenant and unit records, recurring income and expense, check writing, checkbook balancing, printing tenant notices, income and expense ledgers, and much more. Free telephone support. Demo for $25, credited to purchase.
Labana Management Company
P.O. Box 2037
Dearborn, MI 48123
313/562-6247

Bar Code Headquarters



Labeling Software

Now with PostNet®

- 65 PostScript Type 1 Bar Code Fonts – As easy to use as Times or Helvetica
- Use in any program with a font menu
- Code 39, UPC/EAN, 128, I 2of5, PostNet
- Not HyperCard Dependent because they're fonts
- Simple, Easy-to-Use, Plug & Play!
- Create 1,000 incremented bar codes in 5 seconds or translate your list using Sequencer™ DA
- Generate film masters in Quark, PageMaker, etc.
- **$199** includes our DA, All Fonts and Manual

Bar Code Readers

New RF Wand

for all Macintosh ADB or Serial

- Attaches thru ADB as 2nd Keyboard in seconds.
- UPC/EAN, Code 128, 2of5, Code 39, Interleaved 2 of 5
- Wand, Magstripe, CCD, Laser, Slot Badge



- All European Keyboards Supported
- **Top Rated by Independent Reviews**
- Complete Reader with Cordless RF Wand – **$695**
- Complete Reader with CCD Scanner – **$624**
- Complete Reader with Corded Steel Wand – **$329**

Portable Readers

With Voice Prompts

for all Macintosh ADB or Serial



- 64K or 256K RAM. Keyboard or serial upload.
- Download Tables
- Wand, CCD or Laser Input
- UPC/EAN, 128, 2of5, MSI, Code 39, etc.
- 4 x 20 LCD, 35 Keys
- 2 Built-in Inventory Programs
- Optional Voice prompts and error msgs. You record!
- Double duty as non-portable
- Very easy to program & interface with applications
- Complete 64K Unit with Wand & Voice – **$799**

Ordering is Easy!

Call for Our Catalog

- 30 Day Money Back Guarantee
- Qualified P.O's Accepted
- 2 Year Warranty on Readers
- Same Day Shipping
- Free UPS Blue in US

800-345-4220

or call 408-458-9938 • FAX 408-458-9964

In Europe call our Irish Office at 00 353 1 6614 566

WORTHINGTON DATA SOLUTIONS

Business Tools

Job Tracking — *Made-2-Order™*

Manufacturing — *InQuire/Mac™*

Forecasting — NEW!

Inventory
Purchasing
Estimating
Order Entry
Bill of Material
Custom Forms
MRP

• New Hybrid Solutions • Relational Database
• AppleScript Ready • Easy-to-Use Interface

OnBase Technology, Inc.
Interface...Database...OnBase

Call Now for Demo
800-782-5682
714-830-5682 FAX 830-5691

OK

CIRCLE 479 ON READER SERVICE CARD

Cash On Your Screen!

Credit Card Authorization & Electronic Deposit

MacAuthorize™



- Automatically authorizes and deposits all credit card sales—individually or in batches
- Save time and money, eliminate credit terminals
- Certified on all major bank networks
- Handles all credit cards plus check guarantee
- Supports AppleEvents & Import/Export
- Supports card readers & receipt printers
- Instant totals, discount rates, printed reports, etc.
- Database and file searching
- Many more features

POS Credit Developers since 1981

800-4-TELLAN • 408/274-1110 • Tellan Software, Inc.

CIRCLE 480 ON READER SERVICE CARD

BRING HOME AN AWARD WINNER.

WINNER 1993 *Discover* TECHNOLOGICAL INNOVATION AWARD



With POWER TRANSLATOR® *PROFESSIONAL* from Globalink® you can translate words, sentences, even entire documents into Spanish, French or German to/from English. All at the push of a button.

Specialized Subject Dictionaries are available for technical and professional uses. You can even create your own!

Give your Mac the power to talk global. Get POWER TRANSLATOR *PROFESSIONAL*, your ticket to worldwide communication.

Globalink, Inc.

9302 Lee Highway, Fairfax, VA 22031-1208
Intl.: 1-703-273-5600
Fax: 1-703-273-3866
1-800-767-0035
U.S. and Canada

CIRCLE 503 ON READER SERVICE CARD

BUSINESS TOOLS
SYSTEMS & PERIPHERALS

Macworld SHOPPER®



Creating precision bar codes is as easy as using a font!

PRINTBAR™
BAR CODE FONTS

- Compatible with virtually any Macintosh application.
- Choose from: • UPC/EAN/ISBN • Code 39 • Interleaved 2 of 5 • POSTNET/FIM.
- 90-day money back guarantee.
- *"This is the best product of its kind, and it's reasonably priced too"* —MacUser review ★★★★½

Scanning bar codes is even easier!



CODESCAN 3000™
BAR CODE READER

- Comes complete with wand and 5 year warranty.
- Scans information directly into software application.
- Available with laser gun, CCD, badge slot, magstripe options.
- No software required. Ready to use in minutes!
- Money back guarantee.

Bear Rock TECHNOLOGIES

Bundle discounts available.

4140 Mother Lode Dr., Ste. 100, Shingle Springs, CA 95682
916 672-0244 · Facsimile 916 672-1103

Call the Bar Code Experts

800 232-7625

1-800-334-KIWI

Quadra

605 4/80.....$888	610 8/160 DOS.....$1499
605 8/230.....$1175	650 8/230.....$1999
610 8/160.....$1299	650 16/500.....$2575

Power Mac

6100 8/160.....$1649	7100 16/500.....$3199
6100 16/500.....$2299	7100 24/1Gig.....$3799
6100AV 8/250CD..$2375	8100 24/1Gig.....$5099

PowerBook

145b 4/80 w/Global Village Bronze modem....$1275	
180 8/240.....$2499	Duo 250 & 270c.....Call
520,520c, 540, 540c, 280, 280c.....Call	

Monitors & Printers

Magnavox 14".....$249	Stylewriter II.....$275
Apple 14" Trinitron.$399	Deskwriter 520.....$289
NEC 4FGe.....$625	Deskwriter 560C...$575
Sony 17SE1.....$1135	HP Laserjet 4ML...$975
Radius Monitors.....Call	Laserwriter 360..$1449

Specials

IIsi 5/80.....$599	660AV 8/230CD....$1799
LC III 4/80.....$725	80mb internal HD..$125
IIvx 4/230.....$975	40mb Pwrbook HD...$49
Centris 610 4/80....$949	256k LC III Vram.....$18

Trade-Ins Wanted

All products in this ad are NEW.
Visa & Mastercard No Surcharge.
Better Business Bureau Member.

Kiwi Computers, PO Box 67381, L.A., CA 90067
Toll Free (800) 334-5494 Fax (310) 286-9667
In California and Overseas (310) 553-4507
Hours: Mon-Fri 7.30am-6pm, Sat 9am-2pm PST

All products have a 1 year warranty.
Returns are subject to a 15% restocking fee.
Prices subject to change. Quantities may be limited.
Not affiliated with Kiwi Software, Inc.

CIRCLE 404 ON READER SERVICE CARD

Wanted: Used Macs!

- ***We'll pay you cash*** for used Mac equipment! Call now for FREE quote.
- We also sell refurbished Macs w/1-yr warranty & 10-day money-back guarantee. All models.

RENTEX (800) 545-2313

CIRCLE 521 ON READER SERVICE CARD

FAST
MAIL ORDER
Distribution
POINT-OF-SALE
SYSTEMS

POS/OE 4 MAC™

- •ORDER ENTRY
- •BARCODING
- •INVOICING
- •MULTI-USER
- •FAST CASH RETAIL
- •CREDIT CARD PROCESSING
- •PURCHASE ORDER
- •INVENTORY CONTROL
- •DEMO available

EES Companies Inc

800 - 508 - 4444
TEL 508.653.6911 FAX 508.650.1872

CIRCLE 600 ON READER SERVICE CARD

The Experts Choice for Barcoding!

Barcode Generation

MacBARCODA
With a color option that works

All the vital features for **safe, high-quality** barcode production. All the popular barcode types. Compatible with all major page-makeup and graphics software. The highest precision barcoding package available for the Mac.

Barcode Readers

Bar code data collection for the Mac or PC.Works with any software package. All major bar codes supported.

Wand Reader **$ 255**
Laser Reader **$ 495**

Label Printing on Sheets

LabelDesigner

Version 2.0 of the easy-to-use, PostScript label printing package. Any label size & sheet layout. Text, barcodes, PICT & EPS graphics incrementing barcodes and numbers, plus many new features. Includes free industry-standard label templates.

Label Printing on Reels

macthermal

The easiest solution for printing short-run multi-variation labels on reels with powerful text, graphics, and barcode facilities. Compatible with the range of Zebra reel-fed thermal printers.

Call Toll Free -

Computalabel **800-289-0993**

28 Green Street, Newbury MA 01951 Fax 508-462-9198

CIRCLE 544 ON READER SERVICE CARD

✻ GOLDEN OPPORTUNITIES ✻

4 COLOR FILM (CMYK)
4 PRESS PROOFS (PRINTED)
2 HIGH RESOLUTION SCANS

$95.00 8½ x 11

✔ From Your Mac Files
✔ Fully Composed/Plate Ready
✔ 9 Work Day Turnaround
✔ COMPLETE FILM SERVICE



$39.95 +$6.00 S&H

DON'T GUESS AT THE CMYK VALUES ON YOUR MONITOR!

Verify screen color with the **ULTIMATE TINT BOOK.** This 10" x 13" 3 ring binder contains 126 pages with 18,144 CMYK combinations with color type guide.

30 DAY MBG · MasterCard · AMERICAN EXPRESS · SORRY NO COD'S

SEPARACOLOR INTERNATIONAL INC.
800.779.1158 310.719.9950 FAX 310.719.7076

CIRCLE 432 ON READER SERVICE CARD

Syquest Cartridges



270MB	$95 (5+)
105MB	$58.99 (5+)
88MB	$88.99 (5+)
44MB	$58.99 (5+)

SuperMicro — We specialize in Image Processing — Fax: 310-782-5974
We also Sell & Lease Systems
800-352-3415

Optical Cartridges



Sony 1.3GB	$135
OEM 650MB	$87
Komag 128MB	$33 (5+)
Princo 128MB	$28.99 (5+)

SuperMicro — We specialize in Image Processing — Fax: 310-782-5974
We also sell Hard/Syquest/Optical Drives
800-352-3415

CIRCLE 445 ON READER SERVICE CARD

Big Mac Computers, Inc.

Since 1987
Division of WCN

WE CARRY EVERYTHING FOR MAC

Power MACs

8100	8/0	3497
8100	16/500	4295
8100	40/1.8	5995
8100	128/2.4	10350
8100	256/3.4	16500
8100AV	8/0	4195
8100AV	40/1.8	6595
8100AV	128/2.8	10540
8100AV	256/34	17150
8100AV	16/1.7	5395
7100	8/0	2395
7100	24/500	3295
7100	72/1.8	7395
7100	136/2.4	10795
7100AV	16/500CD	3875
7100AV	48/1.7	5495
7100AV	72/1.2	6095
7100SOFTWINDOW	16/250	3127
6100	8/0	1495
6100	8/250CD	2050
6100	16/500	2495
6100	32/1.2	3295
6100AV	8/250CD	2450
6100AV	16/500	2795
6100SOFTWINDOW	16/250	2295

POWERMAC UPGRADE

UPGRADECARD	682
6100/60AV	1395
7100/66AV	1695
8100/80AV	1995

COREL PROFESSIONAL PHOTOS CD-ROM

HUNDREDS TO CHOOSE FROM
$33.95 ea. or 4 for $119

Quadra's

840AV	0/0	2395
840AV	16/500	3150
840AV	64/2.0	5795
800	8/500	CALL
950	8/400	3195
950	64/1.2	6150
605	8/230	1250
610	16/230	1895
650	16/500	2495

Power Books

180	8/80	2195
180	14/340	3195
180C	14/340	3395
250	12/240	2195
270C	12/240M	3150
540C	4/320	CALL
540C	36/550	CALL
540	4/240	CALL
520C	8/160	CALL
520	8/200	CALL
280C	4/320	CALL
280	4/230	CALL

Any Custom Config. Available

New Items

Quick take	695
Color Pro	595
Newton 110	589

Apple Monitor

14" HiRes	399
16"/17"	1025/CALL
14"AV/20"	599/1995

Apple Printers

320/630	950/1949
300/310	495/650
360/810	1450/4395

☆☆ Specials ☆☆

Sony 1936 20"Tri.		1650
Nikon Cool Scan.		1695
Duo 250	4/230	1695
Duo Dock		345
Apple CD	150	139
Micro Disk AV LT 1700		1550

Any Product or Software Not Listed Please CALL

SUPERMAC

20TXL/17T	1920/995
Thunder/24	1575
Thunder IIGS 1360	2950
Proof Positive	CALL

AGFA

Studio Scan	995
Studio Scan Tranp.	345
Arcus Plus	2695
Arcus + Tranp.	795

UMAX

UC630	799
UC840	995
UC1260	1295
UC1200SE	2495
Tranparency	495

GCC

Selet Press 600	3697
Selectpress 1200	5595
Color tone	5995

Kodak

Color Ease	6495
450 GL	1395
PCD Writer 200	CALL

Hewlett Packard

DeskWriter 520	289
DeskWriter 550C	395
DeskWriter 560C	563
DeskWriter 310	295
DeskWriter 1200C	1875
LaserJet 4ML	989
LaserJet 4MP	1330
LaserJet 4M	1875
HP 4Si MX	4240
ScanJet IICX/IIP	910/695
JetStore 2000E 2GB DAT	1595
40GB Optical JukeBox	13999
187GB Optical JukeBox	44900
1.3GB Optical Drive	2495

Demo Mac's

840	8/230	2395
800	8/230	1850
950	8/400	2495
G	5/80	895
160	4/80	995

$ave on $oftware

Microsoft Excell 4.0	311
Microsoft Office 3.0	456
Microsoft Word 5.1	271
Microsoft Power Point 3.0	289
Claris Works 2.1	189
Quark Express 3.2	566
Claris File Maker Pro 2.1	253
Aldus PageMaker 5.0	538
Microsoft FoxPro 2.5	432
Microsoft Project	425
Connectix Ram Doubler	59
Now Utilities 4.0.2	79
Adobe PhotoShop 2.5	548
Illustrator w/StreamLine 5.0.1	379
Fractal Design Painter 2.1	252
Aldus FreeHand 2.0	363
HSC Kai PowerToll 2.0	99
Adobe Premier 3.0	432
Aldus SuperPaint 3.5	56
AltSys Font Grabler 4.0	259
Gold Disk Video Director 1.5	125
Disney Screen Saver	29
Kid Pix 1.2	33
M.Y.O.B. 4.0 w/Payroll	106
Mini CAD 5.0	495
PIXAR Typestry 2.0	159
Lotus 1-2-3 1.1	295

Custom configuration for all Audio-Video & Desk Top Publising

Exchange any OLD MAC to Power PC

LEASING AVAILABLE

Call for APPLE 3rd party products • International Orders, Visa, MC & AmEx Welcome • Next Day Shipping for U.S.A. & International Prices are subject to change w/o notice • All prices shown are C.O.D. Prices

Tel: (310) 470-7099 • Fax: (310) 470-8099

10837 SANTA MONICA BOULEVARD • LOS ANGELES, CALIFORNIA 90025

CIRCLE 453 ON READER SERVICE CARD

ADVANCED MAC SYSTEMS

TEL: (310) 314-7372
FAX: (310) 314-7512
800 ▪ 847▪ 4622
Prices are subject to change without notice

Power Mac

6100 8/160	1715
6100 8/250-CD	2095
6100 AV 8/250-CD	2435
7100 8/250	2650
7100 AV 8/500-CD	3635
8100 8/250	3775
8100 16/500-CD	4549
8100 321.2GB/CD	5769

Quadra

610 8/230-w/FPU	1689
650 8/230	1899
650 8/230-CD	2225
650 24/500-CD	3065
800 16/500-CD	3295
840 AV 8/230-CD	2989
840 AV 16/500-CD	3525
840 AV 32/1Gb-Cd	4395
950 8/0	2855
950 16/1Gb	4085

PLI

88C Syquest R/W	499
44MB Syquest	347
Multi SessionCD	597
Optical128MB	989
Infinity 105 Turbo	685
4Gb DAT/Retrospect	1325
10Gb DAT/Retrospect	1550
2.4Gb Mini Array Int	2990

FILM RECORDER! CALL

Powerbook

165 4/80	1525
165C 4/120	1789
180 4/80	1924
180 4/120w/Modem	2469
180C 4/160	2650

Monitor

SuperMatch 20TXL	2499
SuperMatch 17T	1045
20" Color Plus	1649
Sony 1730	1045
Sony 17SE1 Multi	1175
NEC 5FGP Multi	1185
16" RGB Display	929
14" RGB Display	399
Two Page 20GS	799
ViewSonic 17, 17"	999

Scanner

UMAX UC1260	1485
UMAX UC630	747
UMAX UC840	997
HP ScanJet IICX	969

Printer

LW Select 320	895
LW Select 360	1415
LW Pro 630	1965
LW Pro 810	4375
Stylewriter Pro	595
Stylewriter II	295
HP LJ 4MP	1335
HP 1200c/PS	2045

Video Card

Thunder II	2975
Thunder II Li	1875
Thunder 24	1850
Spec.24 PDQ+	1295
Spec. 24 IV	795
PreciClr 24XK	699
PreciClr 24XP	635
Pt Bd Turbo	1066
Pt Bd Turbo Li	747

Hard Drive

230MB	235
1.2GIG	795
520MB	519

CIRCLE 470 ON READER SERVICE CARD

MAC MULTIMEDIA

Loviél 2X CD ROM Drive $349
Loviél 3X CD ROM Drive $549

BUNDLED W/CABLES, CADDY & FWB CACHING SOFTWARE ($99 RETAIL VALUE)

UPGRADE YOUR BUNDLE W/ **SPEAKERS & 4 TITLE CHOICES** FROM OUR EXTENSIVE CD LIBRARY FOR JUST $100. INCLUDING COMPTONS ENC., JUMP RAVEN, MAYO CLINIC, THE BEATLES, NAUTILUS, JAZZ, TOONS, DINOSAURS...

COMPLETE MULTIMEDIA SYSTEMS

- We Stock Desktop Video and Authoring Systems— Plug & Play right out of the box!
- High End Video, 3D, & Graphic Software—Strata Pro, CoSA, Director, Premiere...

LOVIÉL

Storage — 1.2 gig —$799
RAM — 4 meg SIMM — $150
Lowest Prices — CALL

West 800-688-3696
East 800-688-3697
Fax 612-828-6881
Dealer calls welcome

CIRCLE 534 ON READER SERVICE CARD

EXTERNAL DRIVE HOUSINGS

Full Height	145.00
Half Height	89.00
3.5" Mini Housing	89.00
2.5" Pocket Housing	89.00

- Closed or Open Front Bezel
- Includes FWB Software & all necessary cables.
- 110/220 VAC Auto Switching Power Supply
- Full Height Cabinet will hold (2) 3.5" or (2) 5.25" HH Drives

DATAMAX
26212 Dimension Dr. #220
Lake Forest, Ca 92530
800-321-4962
Int'l 714-586-9907
Fax 714-586-6959
MC,VISA,AMEX, GOVT. & UNIVERSITY P.O.'S WELCOME

CIRCLE 552 ON READER SERVICE CARD

Macintosh



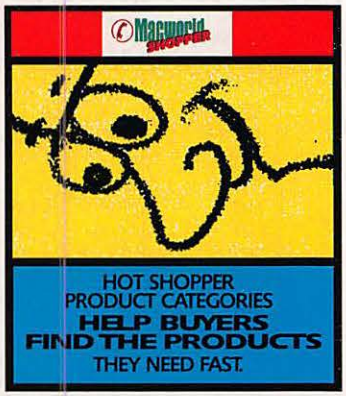
Power Mac 6100 8/160	$1,576
Power Mac 6100AV 8/250CD	$2,251
Power Mac 7100 8/250	$2,512
Power Mac 7100AV 8/500CD	$3,455
Power Mac 8100 8/250	$3,610
Power Mac 8100AV 16/500CD	$4,808
Quadra 605 4/80	$769
Quadra 840AV 8/230	$2,713

1 800 404-9976
MACNET
THE NEW FRIENDLY SERVICE

CIRCLE 543 ON READER SERVICE CARD

SALE!! CLOSE OUT PRICES!!
Apple Performa display: 14" VGA, .39 dot pitch, 640 x 480, tilt and swivel base, brand new, 1 year Apple warranty. Only $149.95...10 PCS+ $129.95

Apple Workgroup Srvr. 95: PDS card upg. kit. New, AUX s.w., warr. Upg. Quadra 900, 950 to desktop UNIX Srvr., 512K $999.95, 128K $699.95. Qty. Discount.
PC/PC Computer Liquidators
1650 Mansfield St.
Santa Cruz, CA 95062
Call: 408-464-2667
Fax: 408-464-2800



MAC PROFESSIONAL

SINCE 1988

WE SELL BRAND NEW PRODUCTS WITH FULL 1 YEAR PARTS AND LABOR WARRANTY. ALL PRICES ARE C.O.D. & SUBJECT TO CHANGE.
19801 VENTURA BLVD. WOODLAND HILLS, CA 91364. NO TAX OUTSIDE CA

(818) 719-9200 FAX (818) 719-9115

POWER MAC

8100	16/250	3987
8100	24/500	4447
8100	40/1000	5377
8100	72/1.8 G	6777
8100 AV	16/500 CD	4997
8100 AV	40/1.8 G	4997
8100	SOFT WIN	CALL
7100	16/250	2847
7100	24/500	3277
7100	40/1000	4297
7100 AV	16/500 CD	3847
7100 AV	40/1.8 G	4777
7100	SOFT WIN	CALL
6100	8/230	1777
6100	16/25 CD	2277
6100	24/500	2477
6100 AV	8/250 CD	2347
6100 AV	16/500CD	2877
6100	SOFT WIN	CALL

CAMERA

QUICKTAKE 100	717

QUADRA

950		CALL
840 AV	8/230-CD	2987
840 AV	16/500	3297
840 AV	40/1000	4497
840 AV	64/1.8-G	5577
650	8/250	1977
650	16/500	2477
650	32/1000	3297
650	40/1.8-G	3977
660 AV		CALL
610		CALL
605		CALL
610 DOS	8/160	1527

POWER MAC UP-GRADE

UP-GRADE CARD	677
6100 / 6100 AV	1377
7100 / 7100 AV	1677
8100 / 8100 AV	1977

SYQUEST

88/44C	447

POWER BOOKS

NEW POWER BOOKS HAVE ARRIVED!

165/180/180 C	CALL
ALL ACCESSORIES	CALL

DUO

250	CALL
270 C	CALL

SCANNERS

UC 630	747
UC 840	947
UC 1260	1247
HP II CX	967
SCANMAKER II	717
SCANMAKER IIXE	1047

MODEM

PWR PORT GOLD	287
PWR PORT MERCURY	327
MAC &FAX	197

PRINTERS

STYLEWRITER II	287
COLOR PRO	587
HP DW 560	577
HP DW 310	317
HP 1200 C/PS	2047
320/360	887 / 1447
630 / 810	1947 / 4377

TEXAS INSTRUMENTS

PRO 600 PS 23	1377
PRO 600 PS 65	1577

GCC

ECLIPSE 8PPM	1577
ECLIPSE 4PPM	977
SELECT PRESS 600	3577
SELECT PRESS 1200	5777

MONITORS

14 / 14 PLUS	397 / 297
14" AV	627
MULTISCAN 17	1077
MULTISCAN 20	1977

SONY NEC

1730 / 17SE	977 / 1177
2036 / 2038	1897 /2087
4FGE / 3V	647 / 577
5FGP / 6FGP	1177 / 2147

SUPERMAC

17T	997
20TXL	1947
21"	CALL

AUDIO / VIDEO PRODUCTION

DIGITAL FILM 2050	3377	PINNACLE REC CD	3677
VIDEO VISION STUDIO	3377	KODAK	CALL
SUPERMAC HDTV	7977	TRUEVISION BDS	CALL

WE SPECIALIZE IN CUSTOM MADE CONFIGURATIONS

CIRCLE 495 ON READER SERVICE CARD



We Carry New Products Only!

Free CDs with every purchase of CD Bundles

8100AV special

136/2.4Gig/Press View 21" **16666**
CD / Thunder IIGX•1360

Apple — Power Macs 8100

8MB/250HD 3795	8MB/250HD/CD 3995
16MB/500HD 4340	16MB/500HD/CD 4565
16MB/1GIG/CD . 5115	24/1GIG 4885
40MB/1.8GIG/CD 6162	24/1GIG/CD 4150
(AV)16/500/CD .. 5069	(AV)24/1GIG/CD 5382

16MB/500HD/CD/Color 14"/Ext. Key 5099
40/1GIG/Syquest 88C/Ext Key 5995
72/1.8GIG//Multiscan 20"/CD/ 8995
136/2.4GIG/Multiscan 20"/CD 11999

Apple — Quadra 840

8Mb/230 2725	24/500/CD 3795
8Mb/230/CD . 2950	24Mb/1Gb 3810

Apple — Power Macs 7100

8MB/250HD 2650	8MB/250HD/CD 2999
16MB/500HD 3195	16MB/500HD/CD 3585
24MB/500/CD ... 3795	24/1GIG 3720
74MB/1.8GIG 5645	40MB/1GIG/CD . 4699
(AV)8/500/CD 3645	(AV)24/1GIG/CD 4695

16MB/400HD/CD/Color 14" plus/ key . 3495
40/1GIG/Apple17" Color /Ext Key 5259
72/1.8GIG/20"Color/CD 7799
(AV)72/1.8GIG/20"Color/CD 8599

Apple — Power Macs 6100

8MB/160HD 1685	8MB/250HD 1845
8MB/250HD/CD 2095	16MB/500HD/CD 2590
24MB/500 2595	24/1GIG 2890
(AV)8/250/CD 2454	(AV)16/500M/CD 3191

8MB/160HD/CD/Mono 14" /Ext. Key . 1895
8MB/250HD/CD/Color Plus/Ext Key .. 2475
516/500MB/CD/SuperMac 17T 3750
(AV)16/500MB/CD/SuperMac 17T 3995

CALL FOR THE NEXT GENERATION POWERBOOKS

MACMARKET
6924 CANBY AVE. UNIT #104
RESEDA, CA. 91335

To Order Call:

1•800•223•4622

Other Inquiries & International Orders:

TEL: 818 • 708 • 6388 **FAX: 818 • 708 • 6399**

WE install your memory...., internal syquest...., Internal optical...., internal DAT.., and test all components together before shipping your custom configured system.

WE STOCK ALL ADVERTISED ITEMS

Quadra 605 SPECIAL

040/25MHz / 8MB/230MB **1599**
14" Color Plus / Ext. Kybrd

Apple — Quadra 650

8Mb/230 1995	24/500/CD 3035
8Mb/230/CD . 2322	24Mb/1Gb 3135
16Mb/500 2499	40Mb/1GB/CD 3899

Apple — Quadra 660AV

8Mb/80 1395	16/500 2045
8Mb/230 1585	16/500/CD 2245

Apple — Monitors

16" Color 975	Multiscan 20 . 1975
Color Plus 295	Color Display . 425

Audiovision 14" Display 575

Apple — Printers

Select 320/Toner .. 895	Select 310/Toner . 799
Select 360/Toner 1499	Pro 810/Toner ... 4650
Pro 630 W/Toner 1999	StyleWriter II 299
Color StyleWriter .. 595	Portable StyleWritr 405

Exabyte — Back-up

5Gig 1495 10Gig 2366

NuDesign/Sony — Back-up

5Gig 999 8Gig 1179

Mitsubishi — Monitors

Diamond Scan FS 15" monitor 519

Zenith — Monitors

15" Zenith .28 dot pitch FlatScreen 455

E-Machines — Monitors & Video

Futura IILX 759	Futura IISX 449
Ultura LX 1099	T16 II 1235

Radius — Monitors & Videos

Intellicolor 20 1849	Precision Pivot .. 839
Precision 20V . 1745	Pivot Mono 15" .. 569
Full page 15" .. 469	Two Page 21GS 995
Precision 24x 909	PrecisionPro 24x 1344
Display 17 1195	PhotoBooster 769

Asante — Networks

MINI EN/SC 10BaseT SCSI Ether 237
MINI EN/SC Thin 10BaseT SCSI Ether295
10T Hubs 8/12 Connect MACs,PCs 239/479
10THubs/12Port 10BT/Thk/Thn 465
10THubs/8Port 10BT/Thn 229

Micropolis — Hard drives

3.1GB External 10MB/Sec 2233
1GB Ext. 8ms, Wide SCSI 20MB/Sec 1044

QMS — Color Printers

Hammer Head 3833
Color Script 210 8MB Ram 4222

LOWEST PRICES ON ALL MACPRODUCTS LINES

SuperMac — Monitors & Video

Thunder line-up

IIGX•1152 1995	PressView 21" 3295
IIGX•1360 2795	21T XL Color 2199
IIGX•1600 ... CALL	20T XL Color 2049
Thunder 24 .. 1695	20" Color Plus1535
Spec Power.11521242	SuperMatch 17T 1030
Spec. 24 IV 753	SuperMatch 17XL 999
	Platinum 21 .. 1095

PLI — Back-up

Infinity 88/44 .. 488 Infinity Optic 128 .. 999

HP — Printers

Laser 4M 1895	Laser 4MP ... 1395
Laser 4ML 995	Deskjet 1200cps 2095
Deskwritr 550c 499	Deskwritr 520 . 335
Deskwritr 650c 595	Deskwritr 310 . 355

NEC — Monitors & Printers

4FGE 15" 686	6FGP 21" 1999
5FGE 17" 1095	5FGP 17" 1188
3FGE 15" 595	3V 15" 495

Model 640 300dpi, 3MB Ram 799
Model 1097 600dpi, 7MBRam,10ppm 1395

Pinnacle Micro — Back-up

PMO 650MB Optic. 2595 Recordble RCD 202 3295
Sierra 1.3 GB Ext Optical 2649

Microtek — Scanners

Scanmker II 725	Scanmaker II XE .. 869
Scanmker IIG 469	Scanmker IISE 765

Umax — Scanners

630 LE 722	1260 1195
840 914	1200SE 2595
Auto Feeder ... 435	UTA 666

Sony — Monitors

GDM 2038 ..... 1959 17SE 1149

WACOM — Pen Tablets

ARTZ-Z 6X8 ..... 289 12X12 UD 495

NewGen (Imager Plus) — Printers

6L/Ethernet 3999 12/Ethernet 6199

Texas Instruments — Printers

MicroWriter PS23 . 695 MicroWriter PS65 . 949
MicroLaser Pro 600, PS 23, 8PPM.. . 1345
MicroLaser Pro 600, PS 65, 8PPM... 1549

GCC — Printers

WriteMove II 399	BLP Eclips 4PPM . 939
BLP Elite 4PPM ... 777	PLP II 4PPM 565
SelectPress1200 5766	BLP Eclips 8PPM 1295

SelectPress 600/600 Pro 3559/4599

NIKON — Scanners

COOLSCAN (Scanner 35mm Slide).. 1848
COOLSCAN (Internal).. 1590

- We accept COD, and Purchase orders
- Free Shipping in U.S. for all CPU Repairs
- All Returns are subject to restocking fee, must be in original package, condition & needs an RMA#
- Visa, MC & Discover add 2%
- Prices are subject to change without notice

CIRCLE 420 ON READER SERVICE CARD

DATA MICRO COMPUTER

3847 Grand View Blvd. Los Angeles, CA 90066

TEL: (310) 398-3300

FAX: (310) 391-2488

Corporate, Dealer, and International Sales Welcome!

Next & same day shipping avaiable! No sales tax for out side of California orders.
Prices subject to change with out notice!



Leasing available!
FOR BUSINESSES ONLY!

POWER PC

6100	
8/160	1652.
8/160CD	1952.
8/250CD	2126.
16/250 Win.	2326.
AV 8/250CD	2390.
AV 16/250CD	2690.
7100	
8/250	2575.
8/250CD	2875.
16/250 Win	2995.
8/500CD	3495.
16/250CD	3150.
8100	
8/250	3785.
8/250CD	4075.
16/500	4352.
16/500 Win	4677.
16/1Gig CD	4952.

QUADRA'S

605 4/80	795.
605 8/160	995.
610 8/160	1295.
610 8/230CD	1877.
650 8/230	1995.
650 8/230CD	2295.
660AV 8/230	Call
660AV 8/500CD	Call
800 8/230	2295.
800 8/500CD	2852.
840AV 8/230	2652.
840AV 8/230CD	2895.
840AV 8/1.2	3326.
840AV 64/1.2	5595.
950 8/230	3099.
950 16/1GB	3945.
950 136/1Gig/CD	8130.
950 136/2Gig/CD	8795.

for items not listed please call!

PowerBook's

145B 4/40	1272.
160 4/80	1450.
165c 4/80	1595.
180 4/80	1990.
180c 4/80	2380.
180c 4/250	2685.
180c 14/250	3085.
Duo 250 4/80	1555.
Duo 250 4/250	1745.
Duo 250 12/250	2095.
Duo 270c 4/240	2499.
270c 4/240Fax	2799.
Duo Dock station	369.

EPSON

ES-800C Pro	1225.
Actionscanning	799.

SHARP

JX-325	Call
JX-610	9899.
Printers	Call

PRINTERS

Apple ColorStyl.	625.
StyleWriter II	295.
Portable Styl.	395.
Pro 630	1950.
Pro 810	4352.
Select 300	495.
Select 310	677.
Select 360	1469.
DeskWriter 560c	585.
D.Writer 1200c	1895.
HP Laser 4M	1875.
HP Laser 4ML	989.
HP Laser 4MP	1377.

Daystar

Turbo 040/40	1219.
Turbo 040i/33	739.
Value 040/40	1225.
Fastcache Qud.	365.
50Mhz powercache	549.
Diskrunner	569.

UMAX

UC630LE	675.
UC840	895.
UC1260	1195.
UC1200SE	2495.
Transparanci	Call

MICROTEK

ScanMaker II	599.
ScanMaker IIxe	975.
ScanMaker IIsp	775.
ScanMaker IIG	475.

SUPERMAC

17" Color MultiScan $744.

17T Trinitron	995.
20TXL	2425.
Pressview 21"	3095.
Thunder II 1360	2185.
Thunder IIGX	2595.
ProofPositive	6595.

E-MACHINE

Futura IISX	437.
Futura MX	477.
Futura IIILX	747.
Ultra LX	1037.
T-16II-MR	899.

NIKON

Coolscan 35mm	1829.
Coolscan Internal	1588.

Pinnacle Micro

Pmo 650mb Opt.	2577.
Sierra 1.3gb	2647.
Recordble rcd202	3277.

NewGen

Turbo PS-440B	2795.
Turbo PS-660B	3145.
Turbo PS-660BE	3495.
Turbo PS1200B	3895.
Imager 6L 600dpi	3350.
Imager 6L/Ether.	3695.
Imager 12 1200dpi	Call

RADIUS

Intelecolor 20	2495.
Intelecolor 20v	1775.
Precision pro 24x	1395.
Precision pro 24xp	475.
Precision pro 24xk	595.
Precision pro 8xj	495.
Stagetwo rocket	1495.
Videovision studio	3195.
Videovision nubus	1495.

FARGO

Color printer	959.
Photo Realis.upg.	249.

PLI

Infinity 40	329.
Infinity 88	499.
Infinity 105	539.
Quick SCSI	319.
MiniArray 1gb	2095.
128 IBM optical	1049.
1.3GB Tahiti II	3167.

Global Village

PowerPort	
Bronze 9600	97.
Gold 14.4	277.
Mercury 19.2	327.

SONY

1430 14"	539.
1730 17"	989.
17SE1 17"	1119.
1936 20"	1599.
2036 20"	2019.
2038 21"	2337.

APPLE

14" Basic color	187.
14" Color Plus	295.
14" RGB Color	399.
14" AV Color	688.
16" RGB Color	949.
17" RGB Color	995.

RasterOps

PaintBoard Turbo	1095.
21" Dual mode	2399.
Moviepak	1149.
DuoMate	399.
20/20 Color	1499.
20T Multiscan	2489.
15" Portrait	399.

NEC

3FGE	599.
3V	639.
4FGE	725.
5FGE	1095.
5FGP	1225.
6FGP	2395.
3PG	2245.

DAT/OPTICAL

2.1 Gig DAT	899.
8 Gig/DDSII	1195.
128MO Sony	995.
256MO Sony	1195.

AGFA

StudioScan	998.

TEXAS INS.

Microwriter ps23	695.
Microlaser pro 600	1388.

GCC

Select press 600	3777.
Select press 1200	5977.
Elite 600	Call
PLPII	527.
Eclipse 4	877.

FWB

Hammer 1gb int.	1265.
Hammer 2gb int.	2185.
Hammer 2gb Ext.	2375.
Hammer 4gb array	Call
PE 130MB Optical	977.
Hammer scsi acce.	627.

Hi-End Specials!

Power PC 8100/80
136MB, 2.1Gig HD, CD
SuperMac 21" Pressview
Thunder IIGX 1360
Extended keyboard
Sharp JX-610 Scanner
$ 25,285.00

Power PC 8100/80
72MB, 1.2Gig HD, CD
SuperMac 20"Triniron
Thunder IIGX 1360
Extended keyboard
with mouse pad
$ 12,295.00

Power PC 7100/66
40MB, 1.2HD CD
SuperMac 17T
Extended keyboard
& Mouse pad
$ 5,695.00

Quadra 840AV
72MB, 1.2HD CD
Sony 20" Trinitron
Radius Pro24x
Extended keyboard
$ 8395.

SuperMac 17T	944.
SuperMac 20T 20"	1695.
Sony 20" Trinitron	1595.

QMS 600dpi Dual tray
Hi-Resolution only
$ 2295.00 Lmtd.qty.!

128MB Optical cartridges
$ 33. Min. 5 pcs.

Call for most recent prices!

Info-Mac CD
Greatest collection of Mac files!
Over 10,000. files!
Only $ 29.00

FOR ORDERS ONLY!
800-345-1234

CIRCLE 508 ON READER SERVICE CARD

Media Cartridges

Optical	SyQuest
128MB $32	270MB $92
256MB $65	200MB $116
370MB $	105MB $57
650MB $110	88MB $84
1.3GiG $120	44MB $54

Kodak Recordable CD's
600MB $18 640MB $26

Quantum Drives

	EXT.	INT.
LPS 270MB	$339	$279
LPS 340MB	$349	$289
LPS 540MB	$504	$444
Pro 1.08 Gig	$849	$789
Pro 1.8 Gig	$1149	$1049

Monthly Special's

	EXT.	INT.
Seagate 3.4 Gig	$2199	$2139
Seagate 1.075 Gig	$812	$752
Quantum 1.8 Gig	$1110	$1050
Fujitsu 128 MO	$835	$785
NEC 2X CD-ROM	$295	$235
Kodak PCD Writer	$5213	
Software, Cable &15 Disc's		

Optical Drives

	EXT.	INT.
Olympus 128 MO		
Ocean 256 MO	$950	$909
Ricoh 650 MO		
Tahiti III 1.3 MO w/ 4MB Cache	$2786	$2716

SyQuest Removables

	EXT.	INT.
270MB	$619	$559
200MB	$599	$539
105MB	$395	$339
88/44MB	$420	$364

Trying to find something and not having any success? Want to save yourself time? Call or fax us your needs and we'll do the rest. We handle anything and everything you need.
Accelerator Cards • Tape Drives
Optical Drives • Scanners • Cables
CD-ROMs • Printers • Plotters

Fax: 714-573-5795

Visa **NEW TECH CONSULTING** MC

800-797-6710 Prices and Availability are subject to change w/o notice **714-838-0529**

CIRCLE 567 ON READER SERVICE CARD

PostScript Laser Printer for Macs and PCs!

Only **$595** With Toner

LX-29000



Optional 250 sheet 2nd tray available

75-sheet universal paper tray accepts letter, legal envelopes and more!

Count on The Printer Works for great deals on PostScript printers! Call for our free catalog!

- Fast 32-bit AMD 29000 RISC processor
- MicroSoft TrueImage PostScript interpreter with 35 TrueType fonts
- Compatible with both Adobe Type 1 and TrueType fonts
- PC and Macintosh compatible—it can connect to both simultaneously!
- AppleTalk, Centronics Parallel and RS-232 Serial Interfaces
- Compact, reliable 4ppm, 300dpi Canon LX engine
- Includes EP-L toner cartridge same as used by HP and Apple
- 1 Year Warranty, 30-Day Money-back Guarantee, Free Technical Support

the PRINTER WORKS
Since 1982

Call Toll-Free
800-225-6116
3481 Arden Road, Hayward, CA 94545

30 DAY MONEY BACK GUARANTEE

CIRCLE 483 ON READER SERVICE CARD

OVER
1/2 MILLION
ACTIVE BUYERS **FIND**
WHAT THEY ARE
LOOKING FOR
IN THE
MACWORLD
SHOPPER SECTION.

Macworld SHOPPER

Sales (818)787-3282

COMPU.D INTERNATIONAL, INC.

FAX (818)787-5555

Power Mac

6100 8-160/500	1649/1978
6100 8-250 CD/500 CD	2079/2279
6100 16-1GB/W-CD	2619/2869
6100 av 8-250/500	2179/2379
6100 av 16-1GB/W-CD	3048/3299
7100 8-250/500	2549/2749
7100 16-1GB/2GB	3399/3698
7100 av 8-250/500	3379/3479
7100 av 16-1GB/2GB	4249/4549
8100 8-250/500	3789/3989
8100 16-1GB/2GB	4659/4959
8100 av 8-250/500	4499/4699
8100 av 16-500/W-CD	4879/5029
8100 av 16-1GB/2GB	5499/5799
SoftWindows Software	319

APPLE CD ROM 300i
For Power PC & Quadra
Factory Installed ADD $249

Quadra

Work Group Servers M. 60/80/95	CALL
950 8-0/525	2699/3149
950 16-1GB/2GB	3899/4298
840 av 8-230/500	2549/2899
840 av 16-500/1GB	3219/3519
840 av 16-2GB/W-CD	3869/4169
800 8-500 CD	2999
660 av 8-250/500	1599/1949
660 av 16-500/1GB	2269/2569
650 8-230/500	1949/2349
650 16-500/1GB	2669/2919
650 16-2GB/W-CD	3268/3568
610 8-160/W-CD	1349/1599
610 8-160 W-DOS CARD	1499
610 8-230/500	1599/1949
610 16-1GB/W-CD	2569/2869
605 4-80/160	849/949
605 8-240/500	1199/1399
IISi 3-40/160	495/599
IIVX 4-80/230	CALL

PowerBook

New Black BIRDS(Estimated Costs)

520	4-160	2199
520C	4-160	2699
540	4-240	2999
540C	4-320	2999

CALL for current pricing on above models

145B/160/165C	Call F/Best Pricse!	
165	4-80/250	1550/1750
180	4-120/200	2099/2199
180/180C	14-320	2890/3350
180C	4-160/320	2649/2890

DUO

280	4-240 *(New Model)*	2499
280C	4-320 *(New Model)*	3499
230	4-40/80	1095/1195
250	4-200	1495
250	12-240 W/Modem	2050
270C	4-240	2499
270C	12-240 W/Modem	3049

MONITORS & CD ROM Drives

20" Trinitron Multi-Scan	1899
17" /14" /12" RGB	1049/399/195
AudioVision 14"	589
14" Color Plus/14" Basic	289/199
CD 150i/150	99/149
CD 300i/300	249/329
Internal CD Kit	29

PRINTERS

Pro 630/810	1929/4349
Personal 320/Select 360	899/1479
LaserWriter IIF/IIF Board	1099/295
LaserWriter IIG/IIG Board	1499/799

Hard Drive

40/80/120 MB HD 2.5"	69/145/195
210/250/340MB HD 2.5"	279/335/445
525MB HD 2.5" For PowerBoook	619
40/160MB HD 3.5"	79/169
270/525 ALL APPLE Hard Drive	279/399
External Case For 3.5"/2.5" Drive	75/55

SUPERMAC™

Thunder II GX 1600	CALL
Thunder 24 V.2.0	1575
Spectrum 24 PDQ+/24 Ser. IV	949/749
Spectrum 24 Ser. V	CALL
Spectrum Power1152	1109
17T Trinitron	969
20" Plus Color Dual Mode	1539
20-TXL Multimode	1929
21-TXL Multimode	2079
20" Hi Res. Trinit.	2399
21" Two-Page Clr.	1699
20" /21" Gray Scale	799/949
T-16IIMR/ Ultura LX	799/1019

Get up to $300 rebate from SuperMac when you buy a monitor combined with a video card!
Call for details. Offer expires June 30th, 1994

Software Specials

Adobe Photoshop V. 2.5.1	525
Adobe Illustrator V. 5.0	329
Adobe Premier V. 3.0	419
Aldus PageMaker V.5.0.a	549
Aldus Freehand V. 4.0.1	359
Caere OmniPage Pro V. 2.1	499
ClarisWorks For Power PC	188
Claris FileMaker Pro V. 2.1	255
Microsoft Office V. 4.0	475
Microsoft Excel/Word	299/299
Pixar Typestry V. 2.0	199
Penthouse *Interactive CD*	95
Other Software	CALL

SPECIALS

DUO 250 4-80/200 $1395/1499
68030, 33MHz, Active Matrix Display,
4.2 Lbs. Lightest PoweBook, Upgradable to 24MB RAM

DUO Dock $345
1.4MB Super Drive, Ext. Video out, 2 NuBus Slots, 68040 Upgradable

Exchange your DUO
230 To 250 $450
210 To 250 $650

E-Machine E-20 $1149
Futura SX/MX $199/379
T16 IIMR $799

SONY 1304S (New) $369
1024x768 Res., .25 Trinitron

LaserWriter Select 310
5 P.P.M, PostScript F/PC & Mac, 300 dpi $595

SCANNERS
ScanMaker IISP/IIXE 759/869
UMAX 630LE/840 620/825

Removable H.D. Cartridge
44MB $53 88MB $79

SuperMac 17" Multi-Mode
Factory Refurbished $599

Apple Color Printer $545
11x17, 4Color CMYK With ColorSync, 45 Fonts

WE ALSO DISTRIBUTE
COMPAQ TOSHIBA IBM

Easy Leasing & Financing Available

WE Buy Excess Inventory Up To $10,000,000

HEWLETT PACKARD

LaserJet 4ML/MP	945/1325
LaserJet 4M/4M 220V.	1835/1985
4SI MX/4SI	4250/2899
DeskWriter /DeskWriter C	235/369
DeskWriter 550C/560C	455/565
DeskWriter 520/310 Portable	295/319
DeskJet 1200C PostScript	1995
PaintJet XL300 PostScript	3190
ScanJet IIC Demo/CX New	650/899

PLI

Infinity270/105/88C	629/529/449
1.3 GB II Opt.	3099
2GB Array	2649

SONY

1320/17 SE1	339/1120
2036S/2038S	1899/2099

NEC

3FGX/4FG/5FG	499/549/999
5FGP/6FGP/3PG	1175/2150/2350

radius

21" Clr.	1799
Precision Clr.20V/17	1599/1219
Precision Pro 24X	1399
VideoVision Studio	3399
IntelliColor 20i	1849

1-800-929-9333 Orders Only

All prices reflect C.O.D. order only & are subject to change without notice!

CIRCLE 541 ON READER SERVICE CARD

MAC CITY COMPUTERS

ALL SYSTEMS ARE NEW WITH ONE YEAR WARRANTY
NO TAX OUTSIDE CALIFORNIA
WE CARRY FULL LINE MACINTOSH SYSTEMS SINCE 1987
INTERNATIONAL ORDERS
VISA-MC-AMEX OK

Tel: (818) 385-0080
Fax: (818) 385-0081
13860 Milbank St , Sherman Oaks , CA 91423

Quadra

Q650 16/500 CD	CALL
Q650 8/230/CD	1949/2179
Q610 8-230-CD	CALL
Q610 8-80/160	1199/1299
Q605 4/80	899
Q605 8/160	1129
Q840 8-230 / CD	2699/2879
Q840 16-500/ CD	3199/3349
Q840 24-1.2G CD	3999
Q950 8-0/500/1.2GIG	CALL
660 8-230 / 500	1529/1829
CENTRIS 650/610	CALL

PowerPC Upgrades SAVE With Any Purchase
ASK FOR LATEST PRICES

Powerbook

180c 4-80/4-160	2399/CALL
180c 14/250-14/340	Call
180 14/340	2799
180 4/80	1899
180 14/250	Call
165 4/80-4/160	1499 /1699
165 14/250	Call
160 4/40 - 8/160	Call
165c 4/80-4/256	1599/call
145b 4/40-4/80	1149/1249
Duo 270c 12/240 w/m	Call
Duo 250 4/200 w/m	1649
4MB Powerbook	189
10M Powerbook	429
Internal fax modem	CALL
Get A Carry Case For	$29

Printer & Scanners

Pro 810/630	Call
Select 300/310/360	Call
Stylwriter II	289
Stylwriter port	398
HP 4M/4ML/4MP	Call
HP DJ 1200C PS	2079
HP Deskwriter 560c	579
HP Scanjet IIcx	949
UMAX 840	1049
UMAX 1260	1509
Microtek Scan IIXE	969

Monitor

APPL 14" PLUS	295
Apple 14" RGB	399
Radius 20V	1739
Radius Full Page	459
Rad VideoVision Studio	CALL
Supermac 17/20T	899/call
Supermac Thunder II	2299
Supermac Thunder 24	1669
Sony 1320/1730	339/949
Sony 2036/2038	CALL
Nec 3FGE/4FGE	595/695
Nec 5FGP/6FGP	CALL

PowerPC

ALL CONFIGERS AND UPGRADES

8100AV 16-500 CD	5099
8100 72/1g 8.5msec CD	6899
8100 24-1GIG CD	5129
8100 8-250	3799
8100 8-0	3609
7100AV 8-500 CD	3689
7100 8-250/8-1GIG	CALL
7100 Softwindows	CALL
7100 8.0	2549
6100AV 8-250 CD	2389
6100 8-160	1669

PLI

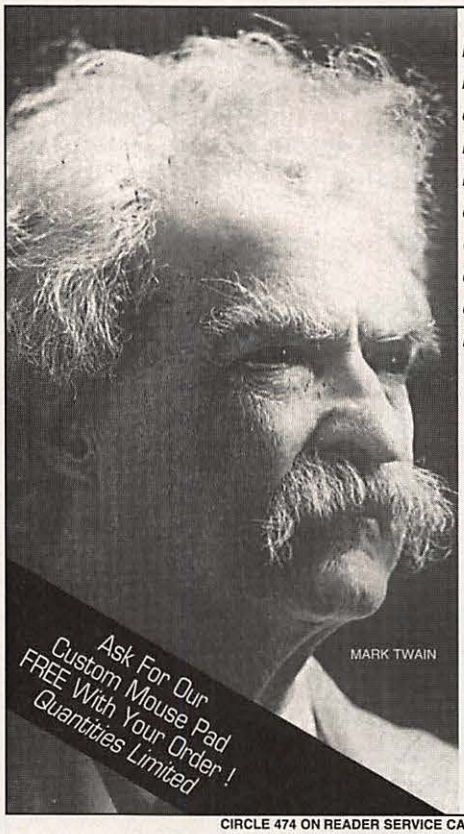
44/88C EXT	489
105MB EXT	419
128 OPTICAL	CALL
MINI ARRAY 1G	1995

CD'S & Hard Drive's

FWB 2g Hammer Wide ex	3099
SlegeHammer 2gb Array ex	2499
Seagate Baracuda 2.4g ex	1799
Seagate 3.4g 11ms ex	2239
Micropolis 3.6g AV ex	2279
Micropolis 1.2g 8ms ex	899
Quantom 1g 9.5msec int	749
QUANTOM 540MB int	449
QUANTOM 240MB int	239
Quantom 80MB int	129
Quantom 256 go DR	339
Toshiba 520 go DR	479
TOSHIBA 340 GO DR	489
Fujitsu 520mb int	499
Fujitsu 1.1g 8.5msec int	849
Fujitsu 2.4gig 11msec	1699
Pinnacle Micro 650 opt	2675
APPLE CD 150	165
APPLE CD 300 INT	325
NEC 3XVE Multispin	585
TOSHIBA CD	CALL

ASK FOR LATEST PRICES
WE DON'T TRADE OR SELL USED COMPUTERS
WE SELL ONLY NEW SYSTEMS

CIRCLE 442 ON READER SERVICE CARD



Imagine how many more adventures 'ole Huck would have had if Mark had a Mac ! Call 1 800 275-9924 and let your adventures begin !

MACINTOSH & PC's HARDWARE, SOFTWARE, TRAINING, SERVICE & SUPPORT & LEASING
C.R.I. SYSTEMS
331 DANTE CT.
HOLBROOK NY 11741
*IN NY CALL..*516 737-0800
FAX 737-0923

CRI COMPUTERS SYSTEMS

POWERPC IS HERE !

CIRCLE 474 ON READER SERVICE CARD

TRADE IN YOUR OLD MAC FOR A NEW MAC!

LOOK!

AT OUR PRICES

Quadra/Power Mac		POWERBOOKS/ DUO		DEMO UNITS	
8100 AV	CALL	180C 4-80	CALL	Q700	1340
8100 16-500	4690	180C 14-235	2970	Q800	STOCK
8100 8-230	CALL	180 10-160	2465	Q900	1489
7100 8-0	2530	180 8-340	2645	II SI	395
7100AV 8-5003565		165C 4-80	1689	IIG/IIF	STOCK
6100 8-500 CD2390		165C 4-250	1980	PB 170	1090
6100 8-230	2195	165 4-80	1645	PB 180	CALL
Q840 16-1GB	CALL	DUO 270C	CALL	MORE DEMO UNITS IN STOCK	
Q840 0-0	2490	270 12-240	3190	PB 140	815
Q650	1895	250 4-200	2485	14" MONITOR	CALL
950	CALL	250 +MODM	CALL	CTR 650/660	CALL
900	STOCK	230 4-80	CALL		

TRADE & UPGRADE		SCANNERS	
700 to 7100	1870	NIKON	CALL
900 to 8100	2680	AGFA	2980
Ci to 660AV	740	UMAX.1260	1790.
LC III upgrade	CALL	MICROTEK	STOCK.
PB 140 to 180	CALL	**PRINTER**	
PB 170 to 180	985	NEWGEN	CALL
PB 180C UPG	CALL	HP4ML	990
LOGIC BOARDS		HP 4	CALL
Q-840 AV	CALL	**MONITOR**	
660 AV	985	NEC 4FGE	679
IIF/IIG	CALL	NEC 5FGE	CALL

PARTS !!!	Special Upgrade
POWER SUPPLY	LC, LCII , LCIII to
FLOPPY DRIVE	Preforma 460 33 mhz
HARD DRIVE	$385
IN STOCK	Centris 610 $989

WE SELL: NEW MACS, PRE-OWNED MACS AND PARTS!
PLUS MONITORS, SCANNERS, PRINTERS, MODEMS & MORE

INTERNATIONAL COMPUTER & NETWORKING
FON 310-441-9181 ■ FAX 310-479-0124
10835 SANTA MONICA BLVD., SUITE 102, LOS ANGELES, CA 90025

CIRCLE 439 ON READER SERVICE CARD

IMAGE MACHINES

1-800-909-7879 FL & MA
FREE UPS SHIPPING ($1100 MIN. ORDER)

Power Macintosh · Memory · Printers · Scanners
Power PC Upgrades · YARC Power PC Rendering Computer
HITACHI/NANAO/NEC/NOKIA/SONY/Mitsubishi Monitors
CD-ROM/CD-I/Video CD MPEG Authoring · NTSC Monitors
NONLINEAR VIDEO EDITING & ANIMATION Systems & Software
VIDEO EXPLORER · Radius VideoVision Studio Image Telecast
DATA TRANSLATION · SONY/Panasonic/Ikegami Video Cameras
Laser Videodisc/CD-ROM/Film Recorders · Scan Converters
Electric Image · CoSA · VIDI Presenter Professional · STRATA
Radius · RasterOps · SuperMac · GCC · HP · *NewGen* · KODAK · *UMAX*
SAVE $400! NO PAYMENTS! NO FINANCING CHARGES FOR 90 DAYS

LIMITED ADVERTISING BUDGET?

Macworld Shopper offers a great way to reach 550,000 active shoppers.

Macworld SHOPPER

Inventory Reduction!!

Duo Dock (no floppy).....$199.	IIsi 3/40 (new).....449.	Mac II 0/0 .....279.
SE 1/20 .....249.	PowerBook 100 2/20 .....499.	*Personal L'writer LS .....349.*
LCII 2/40 .....399.	PowerBook 140 2/20 .....599.	Apple 14" Trinitron.....299.

Quantities are very limited and items will be sold on a first come first sold basis. CPUs are without keyboard.

17" Multi-Res Color Monitor by Lite-On

High quality monitor displays 640x480, 832x624 and 1024x768, .26 dot pitch. Includes tilt-swivel base and interconnect cable.

Blow-Out Price!!

$549.

•• E-Machines ••
•• DoubleColor SX ••

Accelerated Color Video Board

Works with Apple 12", 13", 16", Rasterops Sweet 16, ColorPage T16 II, ColorPage E16, SuperMatch 17, NEC D & FG, Sony 1604S, E-Machines T19II, Third Party 19"

$299.

Printers

Imagewriter I	$169.
Imagewriter I w/c	229.
Imagewriter II	299.
Imagewriter LQ	449.
Personal L'writer LS	349.
Personal L'writer NT	649.
Laserwriter II engine (NEW)	699.
Laserwriter IInt	799.
Laserwriter IIntx	899.
Personal L'writer NTR	799.
Apple Color Printer (NEW)	549.
Apple Color Printer	449.



LC 2/40.
Includes Apple Basic color, keyboard, & mouse.

Used CPU's

Mac IIcx 0/0	$599.
Mac Plus	299.
Classic 4/40	499.
Classic II 4/40	599.

Parts

Logic Boards .....Floppy Drives
Hard Drives .....Power Supplies
Imagewriter Parts.....Laserwriter Parts
Cases .....Portable Parts
PowerBook Parts .....Monitor Parts

EXPRESS ORDERS ARE OUR SPECIALTY!!

Monitors &Video Bds.

Apple 12" mono	$149.
Apple Basic Color	129.
Apple 12" color	169.
Performa Plus (NEW)..	299.
Apple 14" trinitron	299.
Apple Portrait	299.
Apple 2-page mono	799.
Seiko CM1445 (NEW)	449.
Apple 16" color (NEW)	899.

Radius

Monochrome Pivot	299.
Color Pivot(anti-glare)	599.
Color Display/21	1499.

(prices with purchase of CPU)

Video Boards

Apple Portrait	49.
Apple 4-bit	99.
Apple 8-bit	129.
Apple 4•8	149.
Apple 8•24	199.
Apple 8•24GC	299.

Upgrades

Mac 512kE to Plus	$99.
Mac SE FDHD ROM & Drive	329.
Mac IIcx to IIci	499.
Mac SE to SE-30 logic board	399.
Mac II to IIfx	1299.
Mac II FDHD (ROM only)	249.
IIci to Quadra 700	999.

Misc. Specials!

CD-SC w/Wayzanta "Fun House"	$149.
SE Power Supply	99.
LC Power Supply & case	179.
20-Meg External Hard Dr.	89.
SE-Analog Bd.	129.
1.44 FDHD floppy mech.	199.
ADB Extended Keyboard (3rd Party)	79.
40-Meg Tape Back-up	129.
LaserWriter Plus ROM upgrade	99.
PowerBook 140/170 Battery	49.
12" Monochrome monitor	169.
LC Logic bd	99.
Mac IIsi Power Supply & Case	149.
ADB Mouse	49.
40-Meg internal for Mac Portable	**149.**
800k External Floppy	110.
5.25 External PC Drive	25.
IIcx/IIci/Quadra/IIxv Power Supply	149.
Portable Battery Recharger	49.
2.5 20-Meg PowerBook Drive mech.	39.
1200 Baud Personal Modem w/cable	29.
40-Meg 5.25 (Internal Mac II/IIx/IIfx)	49.
Nubus Black & White Video bd	49.
LC Ethernet Board	**49.**
CRT & Yoke Assy. (Plus & SE)	29.
IIsi Case	29.
Mac Plus Keyboard	59.
20-Meg Internal Hard Dr.	49.
Portable 2400 Baud Internal Modem	99.
40-Meg External Hard Drive	139.
Case & Power Supply-Mac II/IIx/IIfx	199.
Classic Power Supply	99.
Personal NT Logic Bd.	179.
Mac Portable Numeric Keypad	29.
8-Bit Video Bd (nubus)	149.
Personal SC Logic Board	29.
SuperMac S'view (p'book video i'face)	199.
IIcx case & power supply	199.
Classic Logic bd	129.
CRT & Yoke Assy	49.
Mouse (Mac Plus)	59.
IIfx 1-Meg SIMMS	29.
IIvx Case	129.
Plus Power Supply	119.
StyleWriter AC adaptor	49.



We Buy Macs!
Call 318-424-9791



IIvx 4/230 ***Brand New***
(keyboard/monitor extra)
IIvx 4/0.....$849.

Personal L'writer NTR logic upgrade!!.....$299.



Complete w/ Software!!

$329.

Home Office Starter Package:
SE 1/20, keyboard, mouse
Software: Write Now (word processor), Super Paint, Full Impact(spread sht), Record Holder Plus(data base)

Equipment is used or demo unless otherwise stated. Equipment carries a 120-day warranty. Returns subject to a 15% restocking fee. Prices subject to change. Prices represent *2% cash discount* off full price.

Shreve Systems

1200 Marshall St Shreveport La 71101
FAX 318-424-9771 Tech. 318-424-7987

800-227-3971

CIRCLE 425 ON READER SERVICE CARD

MacLink

Your Link to Lower Prices

800-858-4622

Dealers, Int'l & in CA
Call 818-785-2800

FaxQuote: 818-785-3100

We accept VISA, Mastercard, Am Ex, C.O.D.s, Corporate P.O.s on approval
Dealers Welcome

Over $10,000,000 Inventory to choose from Worldwide Computer Distributor for 8 years

ALL Prices 5% Above Verified Cost • Volume Discounts Available
ORDERS TODAY, SHIPPED TODAY!

Displays

Apple 20" Multiple Scan	$1879
Apple 17" Multiple Scan	$985
Apple 16" Color Display	$799
Apple 14" AV Color Display	$660
Apple 14" Color Display	$399
Apple 14" Color	$179
Supermac PressView 21	$3270
Supermac 20•TXL	$1995
Supermac 17•T	$985
RasterOps 20/20	$1579
RasterOps ClearVue/15	$489
Radius IntelliColor/20	$1998
Radius PrecisionColor 17	$1090
Radius TPD/20GS	$890
NEC 5FGp	$1175
Sony 17SE1	$1225
ALL Unlisted Models	$call

CD-ROM

CHOOSE ANY 3 LISTED...	$99
Grolier's MM Encyclopedia	$99
The Animals	$39
Oceans Below	$29
Space Shuttle	$29
Capital Hill	$29
US Atlas	$39
World Atlas	$59
Funny	$19
Desert Storm	$19
The Orchestra	$59
View From Earth	$59
Word Tales	$39
Supericons	$29
Quicktoons II	$29
Great Business Jokes	$29
Mac Product Registry	$49

Quadra

CUSTOM CONFIGURATIONS CALL

Quadra 950, 8-0	$2675
Quadra 840AV, 16-1000 w/CD	$4200
Quadra 840AV, 8-500 w/CD	$3300
Quadra 840AV, 8-230 w/CD	$2950
Quadra 840AV, 8-230	$2700
Quadra 660AV, 8-500 w/CD	**$1950**
Quadra 660AV, 8-230 w/CD	**$1750**
Quadra 660AV, 8-230	**$1500**
Quadra 650, 8-500 w/CD	$2550
Quadra 650, 8-230 w/CD	$2155
Quadra 650, 8-230	$1855
Quadra 610, 8-230 w/CD	$1895
Quadra 610, 8-230	$1585
Quadra 610, 8-160	$1252
Quadra 610, 8-160 w/DOS	$1395
Quadra 605, 8-160	$1125
Quadra 605, 4-80	$850

PowerMac

CUSTOM CONFIGURATIONS CALL

8100/80, 72-2.4 GB w/CD	$7850
8100/80, 16-1000 w/CD	$5275
8100/80AV, 16-500 w/CD	$4850
8100/80, 16-500 w/SW	$4565
8100/80, 8-250 w/CD	$3875
8100/80, 8-250	$3650
8100/80, 8-0	$3498
7100/66, 16-250 w/SW	$2935
7100/66AV, 8-500 w/CD	$3470
7100/66, 8-250 w/CD	$2765
7100/66, 8-250	$2525
6100/60, 16-250 w/SW	$2190
6100/60AV, 8-250 w/CD	$2260
6100/60, 8-250 w/CD	$1989
6100/60, 8-500	$1985
6100/60, 8-160	$1579
Call for Other Config's	SAVE

PowerBook

Pwrbk 540c, 12-320 w/modem	$4760
Pwrbk 540c, 4-320	$4095
Pwrbk 540, 12-240 w/modem	$3525
Pwrbk 540, 4-240	$2857
Pwrbk 520c, 4-160	$2570
Pwrbk 520, 4-160	$2095
Pwrbk 180, 4-120 w/modem	$2065
Pwrbk 165, 4-80 w/modem	$1679
Pwrbk 145B, 4-80 w/modem	$1335
Duo 280c, 12-320 w/modem	$3997
Duo 280c, 4-320	$3335
Duo 280, 12-240 w/modem	$3045
Duo 280, 4-240	$2380
Duo 270c, 12-240 w/modem	$2999
Duo 250, 4-200	$1675
Duo Dock 230	$575
Duo Dock	$375

Printers/ Scanners

Apple LaserWriter Pro 810	$4261
Apple LaserWriter Pro 630	$1956
Apple LS Select 360	$1451
Apple LS Select 320	$885
ALL Hewlett Packard	$call
GCC SelectPress 1200	$5890
GCC SelectPress 600	$3630
GCC BLP Eclipse 8	$1299
Supermac ProofPositive	$6200
All LaserMaster	$call
All NewGen	$call
3M RAINBOW 2720	$20K
Hewlett Packard IIcx	$990
UMAX 1260	$1150
UMAX 840	$985
UMAX 630LE	$695

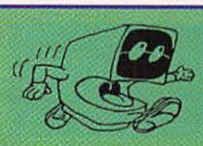
Audio/ Video

Supermac T-II GX1360	2850
Supermac Spectrum 1152	$call
Radius P'Color Pro 24X	$1215
Radius P'Color 24XP	$1400
RasterOps 24XLT	$490
RasterOps Paintboard LT	$785
Radius Editing Aces Suite	$3250
Radius VideoVision Studio	$3190
Seagate "Barracuda" 2	$1790
Seagate "Barracuda" 1	$1260
Micropolis 1.7GB	$1199
PLI 88/WR44	$479
DIGIDESIGN Pro Tools	$4799
DIGIDESIGN Sound Tools II	$2899
DIGIDESIGN Audiomedia II	$990
AND MORE....	$CALL

ALL Prices reflect Cash Discount and are subject to change

MacLink • 15500 Erwin St #2002 • Van Nuys CA 91411

CIRCLE 535 ON READER SERVICE CARD



$$$

MacAttack

(800) 299-MACS
409.690.5353 (Fax)

409.690.5345 (Intl. Sales)
409.690.5331 (Tech. Support)

We Attack High Prices!!

Prices subject to change — please call for latest pricing. We carry hundreds of items — call for availability. Your satisfaction is our goal.
Prices are C.O.D. and subject to change. International Orders and Fax Orders Welcome!

New Macs

Color Classic	$849
Centris 660av 8/500	$1750
Centris 660av 8/500/CD	$1950
Quadra 605 4/80	$890
Quadra 605 8/160	$1177
Quadra 610 8/160	$1308
Quadra 610 8/160 (DOS Compatible)	$1432
DOS Compatible Card for Q610	$349
Quadra 610 8/230	$1648
Quadra 610 8/230/CD	$1964
Quadra 650 8/230	$1933
Quadra 650 8/230/CD	$2248
Quadra 650 8/500/CD	$2789
Quadra 660av 8/80	$1650
Quadra 660av 8/230	$1706
Quadra 660av 8/230/CD	$1964
Quadra 660av 8/500/CD	$2505
Quadra 840av 8/230	$2756
Quadra 840av 8/230/CD	$3007
Quadra 840av 16/500/CD	$3808
Quadra 840av 16/1000/CD	$4420
Quadra 950 8/0	$2713

One Year Warranty On New Macs !!
We sell only Apple original serial numbers.

Software

Photoshop	$540
PageMaker 5.0	$540
After Dark	$29
Filemaker Pro 2.1	$260
Canvas 3.5	$259
Quicken 4.0	$39
Excel 4.0	$305
Word 5.0	$305
Office 3.0 (CD-ROM or Disk)	$460

MacAttack will beat any advertised price on software or send you a free mousepad!

PowerMacs!!

6100/60 8/160	$1651
6100/60 8/250 CD	$2078
6100/60 AV 8/250 CD	$2356
6100/60 SoftWindows 16/250	$2288
6100/60 AV Upgrade	$1285
7100/66 8/250	$2631
7100/66 8/250 CD	$2885
7100/66 AV 8/500 CD	$3620
7100/66 SoftWindows 16/250	$3067
7100/66 AV Upgrade	$1545
8100/80 8/250	$3665
8100/80 8/250 CD	$3898
8100/80 SoftWindows 16/500	$4579
8100/80 AV 16/500 CD	$4882
8100/80 16/1000 CD	$5318
8100/80 AV Upgrade	$1810
Apple Multiple Scan 20 Display	$1913
Apple Quick Take 100 for Macintosh	$667
Apple Color StyleWriter Pro	$571

(Includes 4 Ink Cartridges & Cable)
PowerMac upgrades include installation & trade-in. Customer pays shipping both ways.

Printers

StyleWriter II	$290
Portable StyleWriter II	$384
ImageWriter II	$386
LW Select 310	$780
LW Select 320	$860
LW Select 360	$1436
LW Pro 630	$1912
LW Pro 810	$4374
HP Laserjet 4SI	$3190
HP Laserjet 4SI MX	$4670
Laserjet Toner	$120

Powerbooks

145 4/80	$1200
145B 4/80	$1305
145B 4/120	$1522
165 4/80	$1613
165 4/160	$1800
165 4/160 Modem	$2146
165c 4/80	$1555
180 4/80	$1895
180 4/120	$2055
180 4/120 Modem	$2296
180c 4/80	$2275
180c 4/160	$2610
180c 4/160 Modem	$2725
Duo 230 4/80 (Adpt & Drive)	$1433
Duo 230 4/120	$1433
Duo 230 4/160 (Modem & Dock)	$2200
Duo 250 4/200	$1814
Duo 250 12/200 Modem	$2296
Duo 270c 4/240	$2583
Duo 270c 12/240 Modem	$3055
Duo Minidock	$405
Duo Dock	$477

We ship Airborne Express
International shipments handled by DHL
COD, Mastercard and VISA accepted.
Hours: M-F, 8-6 CST

15% Restocking Fee On All Returned Merchandise.

FREE Mousepad With Every Order!!

Monitors

Apple Color Plus 14"	$288
Mac 14" Trinitron	$407
AudioVision 14"	$613
Mac 16"	$920
Sony 1430 14"	$580
Sony Multiscan 17 SE	$1225
Sony Multiscan 20"	$CALL
NEC 3FGE 15"	$600
NEC 4FGE 15"	$700
NEC 5FG 17"	$1260
NEC 6FGp 21"	$2480
RasterOps Sweet 16	$965
RasterOps 20/20	$1609
RasterOps 21"/24XLI	$2315
RasterOps 20t	$2066
E Machines T16	$995
SuperMatch 17T	$1175
SuperMatch 20 Txl	$2475

Modems

GV PowerPort Bronze	$90
GV PowerPort Silver	$260
GV PowerPort Gold	$280
GV PowerPort Mercury	$330
Geoport Adapter	$113
SupraFax Modem	$225

Newtons

Newton Message Pad 110	$570
Newton Communication System	$630
Newton Professional	$690
PCMCIA Fax Modem	$165
1 MB Storage Card	$110
2 MB Flash Storage Card	$165
Connection Kit for Macs	$85
Battery Charging Station	$75
Rechargable Nicad Battery	$16

CDs

Apple CD 300	$341
Apple CD 300i Kit	$290
Apple Power CD	$360
Apple CD Multimedia Kit	$550

(Includes Apple Design Power Speakers, CD 300 External, & 4 CDs)

PLI (SyQuest)

External	
(Includes Formating Software & 1 Cartridge)	
Infinity 44	$340
Infinity 44/88c	$485
Infinity 105	$510
Infinity 270	$600
Internal	$CALL
Cartridge 44/88/105	$60/90/60

Keyboards

Apple Keyboard II	$75
Apple Extended Keyboard II	$160
Apple Adjustable Keyboard	$130

We have Intl Keyboards!

Scanners

HP Scanjet IIcx	$980
HP Scanjet IIP	$730
Interface ForScanjet	$265
One Scanner	$705
Color One Scanner	$940

Other Stuff

Turbo Mouse	$110
Apple Power Speakers	$140
Seagate ST3600N Ext. (500 MB)	$CALL

CIRCLE 438 ON READER SERVICE CARD

Tel:(818)787-3282 UNIVERSAL COMPUTERS, INC. Fax:(818)787-2111

E-MACHINES.

SPECIALS

SUPERMAC™

E-Machine E-20
$1149

- 20"large screen workspace view an entire Two-Page layout on screen
- Two display resolutioons 1024 x 786 WYSIWYG & 1152 x 870 Two-Page modes
- Compatible with Macintosh Quadra & Centris built-in graphics & popular third-party graphics cards
- EBU Phosphors: Brighter reds & greens for more vivid colors 6500 K White Point
- Natural whites without the blue tinting found at other white points



SuperMac 17" Multimode _ $599
- 1024x768 Res., PC or MAC *

SuperMac 20" Color _____ $969
- 1024x768 Res., 72 dot per inch *

SuperMac 21" Color ____ $1699
- 1152x870 Res., 77 dot per inch *

SuperMac 21" Platinum ___ $849
- 1152x870 Res., 2- Page Gray Scale *

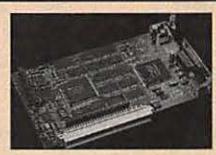
E-Machine T16 IIMR_____ $799
- 1280x1024 Res., PC or MAC *

Accelarate your system performance by adding a video card rather than using built in video!

Futura SX $229
24 -bit color up to 17" monitor

Futura MX $379
24 -bit color up to 20" monitor

- 200% zoom
- On-board Acceleration, QuickDraw



Spectrum 8.24 for IISi _____ $199
Supports 512x384 to 1152x870 8 & 24-bit Color

Spectrum 8.24 _____ $279
Supports 512x384 to 1152x870 8 & 24-bit Color

Spectrum 8LC _____ $279
Supports 512x384 to 1024x768 8-bit Color

VideoSpigot for IISi _____ $99
Single-slot, digital-video-capture card

VideoSpigot Pro for IISi _____ $249
Same as above w/8.24-bit color card

Quadra

605 4-80	$889
605 8-160	$1149
610 8-160 w/o FPU	$1349
610 8-160 DOS Cmptble. w/o FPU	$1479
610 8-230	$1649
610 8-230 CD	$1899
650 8-230	$1979
650 8-230 CD	$2279
650 8-500 CD	$2479
660 AV 8-230	$1649
660 AV 8-230 CD	$1899
660 AV 8-500 CD	$2099
840 AV 8-230	$2799
840 AV 8-230 CD	$2999
840 AV 16-500 CD	$3549
950 8MB RAM-0MB HD	$2799
950 8-230/500	$3099
950 8-500	$3199
950 16-1000	$4049
950 0 DRAM-1000MB HD	$3449

Power Mac

6100/60 8-160	$1649
6100/60 8-250 CD	$2079
6100/60 16-250 W/SoftWindows	$2290
6100/60 AV 16-250 CD	$2359
7100/66 8-250	$2629
7100/66 8-250 CD	$2890
7100/66 16-250 W/SoftWindows	$3069
7100/66 AV 8-500 CD	$3629
8100/80 8-250	$3789
8100/80 8-250 CD	$4029
8100/80 16-250 W/SoftWindows	$4729
8100/80 AV 16-500 CD	$5049
8100/80 16-1000 CD	$4639

Power Mac Upgrades

PDS Upgrade Card	$699
6100/60 Logic Board Upgrade	$999
6100/60 AV Logic Board Upgrade	$1349
7100/66 Logic Board Upgrade	$1489
7100/66 AV Logic Board Upgrade	$1599
8100/80 Logic Board Upgrade	$1799
8100/80 AV Logic Board Upgrade	$1899

MONITORS & CD ROM Drives

14" Color Plus/Basic	$289/199
Color 14" w/SONY Trinitron tube	$399
AudioVision 14"	$589
16" Color Display	$875
17" Color Display	$1049
Multiple Scan 20 Display	$1899
AppleCD 150/150i	$99/139
AppleCD 300	$249
AppleCD 300i	$329
Internal CD Instalation Kit	$29

PRINTERS

Apple Color Printer	$545
LaserWriter Select 300	$529
LaserWriter Select 310	$629
LaserWriter Select 360	$1475
LaserWriter 320	$899
LaserWriter Pro 600	$1199
LaserWriter Pro 630	$1949
LaserWriter Pro 810	$4399
StyleWriter Color Pro	$579

PowerBooks

New Black BIRDS{Estimated Costs}

520	4-160	$2199
520C	4-160	$2699
540	4-240	$2999
540C	4-320	$2999

DUO

280	4-240 (New Model)	$2499
280C	4-320 (New Model)	$3499
230	4-80/120	$1190/CALL
250	4-80/200	$1375/1494
250	12-240 W/Modem	$2099
270C	4-240	$2499
270C	12-240 W/Modem	$3049

Call for all other PowerBooks!

Memory

QUADRA		PowerBook	
4MB	$175	4MB	$175
4MB	$290	4MB	$319
4MB	$620	4MB	$410

1MB F/MAC Portable	$25
2MB F/PowerBook 170/140	$59

1-800-929-9333 Orders Only

All prices reflect C.O.D. order only & are subject to change without notice! We honor AMEX, MC, & VISA. *Factory Refurbished w/Warranty

CIRCLE 434 ON READER SERVICE CARD

Powerbook 180c

4/80	$2249
8/80	$2399
4/160	$2449
14/160	$2995
14/300	$3245

Powerbook 180

4/80	$1895
4/120	$2099
8/120	$2349
14/160	$2699
14/240	$2899

Powerbook 165

4/80	$1499
8/80	$1729
4/160	$1699
8/160	$1949
14/160	$2199

Powerbook 145B

4/40	$1099
4/80	$1199

DUO'S

250 4/200	$1499
250 12/200/Modem	$2149
270C 4/240	$2549
270C 12/240 W/MDM	$2999
DUO DOCK	$379
DUO DOCK 230HD	$599

Quadra 950

8/0	$2799
8/400	$2999
16/1GIG	$3699
256/2GIG	$13995

Quadra 840AV

8/230	$2499
8/230 W/CD	$2699
16/1GIG/CD	$3499

Quadra 800

8/230	$2299
8/230 W/CD	$2599
8/500	$2599

Quadra 660AV

8/80	$1299
8/230	$1499
8/230 w/CD	$1699
8/500	$1799

Quadra 650

8/230	$1899
8/230 W/CD	$2099
8/500	$2299
8/500 W/CD	$2499
16/1GIG	$3099

Quadra 610

8/160	$1289
8/230	$1599
8/230 W/CD	$1969
8/500	$1899
8/500/CD	$2199

Quadra 605

4/80	$799
8/80	$969
8/160	$1099
8/160/CD	$1399
8/240	$1199
8/240/CD	$1499

MORE MACS

Classic II 4/40	$599
Classic II 4/80	$699
Classic II Color 4/80	$749
LCIII 4/80	$899
MAC II SI 3/40	$599
Centris 610 4/80	$799
Centris 650 8/230	$1499
Cent.650 8/230/CD	$1779

UNIVERSITY, GOVERMENT, AND FORTUNE 1000 P.O.'S, Trained Staff, Out of USA OK!

LA's LEADING COMPUTER STORE!

LA COMPUTER CENTER

(310) 473-2535 FAX (310) 312-9041

Ask about our 4 year on site warranty! Next day shipping!

POWER PC

6100 8/160	$1499	7100 8/250	$2399	8100 8/250/CD	$3699
6100 8/250/CD	$1899	7100 8/250/CD	$2699	8100 16/500/WIN	$4349
6100 16/250/WIN	$2149	7100 16/250/WIN	$2849	8100AV 16/500/CD	$4649
6100AV 8/250/CD	$2199	7100AV 8/500/CD	$3349	8100 16/1GIG/CD	$4995

BLACK BIRD

APPLE'S NEW RISC BASED NOTEBOOK!

THESE HOT NEW UNITS ARE IN STOCK!

Powerbook DUO 250

- 68030 33MHz
- 6 HR Battery Life
- 4.2 pounds
- 9" Active Matrix



4/80HD $1399
4/200HD $1499
12/200HD $1849

Powerbook DUO DOCK

- 2 NUBUS slots
- Superdrive
- Expandable
- Affordable

$379

RADIUS

Photobooster for Stage II Rocket	$599
Photobooster for Rocket	$599
Photobooster for Rocket	$799
Stage II Rocket	$1499
Stage II Rocket w/ Macromedia	$1795
Rocket 33 Accelerator	$999
RocketShare	$399
SCSI-2 Booster	$269
VideoVision Basic	$1499
VideoVision Presentation	$1749
VideoVision Studio	$3299
PrecisionColor Pro 24x Interface	$1349
PrecisionColor Pro 24xk	$799
PrecisionColor Pro 24xp	$499
PrecisionColor 8xj Interface	$499
Color Pivot Nubus Interface	$499
PrecisionColor 17" Display	$1299
PrecisionColor 20" Display	$1699
IntelliColor 20" Display	$1849
PrecisionColor Pivot	$899
TwoPage 20" Mono / Full Page	$899/$549

FAX MODEMS

Powerport Global Village Bronze 24/96	$149
Powerport Global Village Silver 96/96	$289
Powerport Global Village Gold 14.4/14.4	$329
Powerport Global Village Mercury 19.2/19.2	$399
Teleport Global Village Gold 14.4/14.4	$329
Teleport Global Village Mercury 19.2/19.2	$399
ZOOM external 24/96 FAX/MODEM	$149
ZOOM external 14.4/14.4 FAX/MODEM	$199
US ROBOTICS 24/96 FAX/MODEM EXTERNAL	$189
US ROBOTICS 14.4/14.4 EXTERNAL	$239
APPLE EXPRESS MODEM 96/14.4	$249

KEYBOARDS

APPLE STANDARD KEYBOARD	$99
APPLE EXTENDED KEYBOARD	$149
APPLE ADJUSTABLE KEYBOARD	$169
101 EXTENDED KEYBOARD	$99
KENSINGTON TURBOMOUSE TRACKBALL	$139

SOFTWARE

MICROSOFT WORD / EXCEL / OFFICE	329/329/499
ALDUS PAGE MAKER / FREEHAND	$549/$399
QUARK EXPRESS	$649

Apple Printers

Select 300 w/Toner	$499
Select 310 w/Toner	$599
Select 320 w/Toner	$879
Select 360 w/Toner	$1439
Pro 630 w/Toner	$1899
Pro 810 w/Toner	$4399
Portable StyleWriter	$399
LaserWriter II F	$899
LaserWriter II G	$1495
Apple Color Printer	$549

Hewlett Packard

DeskWriter 550c	$499
DeskWriter 560c	$569
DeskWriter 310	$339
DeskJet 1200c (PS)	$1999
LaserJet 4ML	$989
LaserJet 4MP	$1349
LaserJet 4M	$1869
Scanjet IIcx	$929
220 Volt Products	CALL

CD-ROM Drives

Apple CD 150 Ext	$159
Apple CD 300 Ext	$389
Apple Power CD	$399
Apple Multimedia CD	$599
NEC 3xi/xe/xp	499/599/659
NEC 4X (4 spin!)	$995

HARD DRIVES

Quantum 80MB	$149
Quantum 230MB	$199
Quantum 500MB	$499
Toshiba 877MB	$589
External Chasis	$99
Apple 2.5" 20MB HD	$49

SYQUEST

44MB Int/Ext	$199/$239
88c Int/Ext	$309/$369
105 Int/Ext	$389/$449

Apple Monitors

14" Basic Color	$199
14" Plus Color	$299
14" RGB	$399
Vivid View 14"	$299
AudioVision 14" w/adt	$649

NEC Monitors

3FGE 15" Color	$599
4FGE 16" Color	$679
5FGE 17" Color	$999
5FGP 17" Color	$1079
6FGP 21" Color	$2199

SONY Monitors

1430 14" Color	$539
1730 17" Color	$939
17SE1 17" Color	$1099
2036 20" Color	$2029
2038 21" Color	$2349

SuperMac

Thunder II 24bit	$2279
Thunder II Lite	$999
Spec 24 PDQ Plus	$995
Spectrum 8	$399
20" Hi Res Color	$2599
20" Platinum Color	$899
21" Plat (2pg Mono)	$1039
SuperMatch 20t	$1649
SuperMtch 21 (2pg)	$2399

SCANNERS

Agfa Arcus Plus	$2799
Agfa Transparency	$689
Microtek II	$639
Microtek IIG	$459
ScanMaker IIXE	$959
ScanMaker IISP	$779
UMAX 600le	$689
UMAX UC 840	$995
UMAX 1260	$1499
UMAX 1200se	$2839

We beat prices! We carry only new products. Let us custom configure your system! We accept VISA, MasterCard, and AMEX.

All prices cash discounted. Prices subject to change without notice. Not responsbole for typographical errors.

CIRCLE 497 ON READER SERVICE CARD

LATEST

Mac S·A·L·E INTERNATIONAL

SPECIALS

INCREDIBLE BLOW-OUT!!

NEW Microsoft Office - $149.00
(Includes Microsoft Word, Excel, Powerpoint & Mail)
ONLY $99.00 with Purchase of CPU

NEW NEC CD-ROM DRIVE - $99.00
Includes Over $200 Software Free:
T/Maker Clickart 2000 (Over 2000 EPS Images)
& FWB CD-ROM Toolkit & The Merchant

•BUY THE NEC CD-ROM DRIVE & MICROSOFT OFFICE ON CD-ROM
FOR ONLY - $199.00

SYSTEM SPECIALS



Used Mac IIci 4/80
Used Standard II Keyboard
Used 13" RGB Monitor
$1199.00

OR

Used Mac IIsi 3/40
Used Standard II Keyboard
New 14" Color Plus Monitor
$799.00



NEW

Power Mac, PowerBook, Duo's	In Stock
New LC 2/40	$399.00
New Personal LW NT	$599.00
New Laserwriter Select 300	$499.00
New Laserwriter II Engine	$599.00
New Apple Mouse II	$59.00
New Conner 543MB 3.5" Int HD	$399.00
New Apple PC 5 1/4" Floppy Drive	$15.00
New Ext. Hard Drive Enclosures	$69.00
New LC Apple Ethernet Card	$39.00

•WE ALSO CARRY THE LATEST MODELS - CALL FOR CURRENT PRICES•

USED

Mac Plus	1/0	$199.00
Mac SE (800K)	1/0	$225.00
Mac SE/30	1/0	$549.00
Mac II	1/0	$199.00
Mac IIsi	1/0	$279.00
Mac IIsi	1/40	$379.00
Mac IIsi	5/80	$529.00
Mac IIcx	1/0	$399.00
Mac IIci	1/0	$649.00
Mac IIfx	4/0	$899.00
Quadra 700	4/0	$1099.00
Quadra 900	4/0	$1399.00
PBook 170	4/40	$1099.00

Personal LW NT	$499.00
Personal LW NTR	$749.00
ImageWriter II	$199.00
Apple Stand. II keyboard	$65.00
Apple Ext. II keyboard	$120.00
Apple Portrait Display	$250.00
Apple 13" RGB Display	$349.00
Apple Two Page Display	$599.00
Apple 8 bit Video Card	$85.00
Mac IIsi NuBus Adapter Card	$49.00
All Apple Video Cards (4•8, 8•24, 8•24GC,...)	Sale

DEALS

EMAC SE OR SE/30 ETHERNET BD - $15.00
POWERBOOK CORDURA CARRYING CASES - $25.00
WE CARRY MAC REPAIR / SERVICE PARTS AND OFFER EXTENDED WARRANTIES!!

Software Special Bundle Includes:
All For Only $25.00
Write Now, Faxmania American Heritage Dictionary, Grammatik Mac, Correct Quotes, and ClickArt Holidays

Prices listed may not be current market value...

1-800-729-7031

Call for latest updated pricing

Prices represent a Cash Discount - off Full Price.

Returns at discretion of Mgmt./15% Restocking fee.

WE WANT TO BUY YOUR NEW/USED MAC EQUIPMENT

CIRCLE 401 ON READER SERVICE CARD

LOWEST PRICES BEST SERVICE
QUADRAS POWERBOOKS
PRINTERS MONITORS
POWER PCs
CALL FOR QUOTES
310-358-9000
FAX 310-358-9100
Dealers & International Orders Welcome
Same Day Shipping in USA
We Only Sell Brand New Systems
Full One-Year Warranty
"Best Computer Source"
–Computer Magazine
COMPU AGE
THE SOURCE TO MACINTOSH WORLD
318 N. LA CIENEGA • LOS ANGELES, CA 90048
CIRCLE 542 ON READER SERVICE CARD

$8.25 MEG
TOTAL MEMORY RECYCLE
PATENT PENDING
Simm$aver® enables you to convert your 30-pin SIMM to 72-pin SIMM to be used in most Macintosh & Power PC lines. NOW is the time to Upgrade/Double the memory capacity of your computer and $ave. Send us your old SIMMs and we will turn them into BIGGER & NEWER SIMMS. Call 1-800-MEMSAVI
Compu-Circle
Tel (316) 264-2244 • Fax (316) 264-4445
CIRCLE 402 ON READER SERVICE CARD

INCREASE YOUR VISIBILITY



Macworld Shopper section offers a great
FOUR COLOR
format to bring your ad to life.
Macworld SHOPPER

Macworld SHOPPER



HOT SHOPPER PRODUCT CATEGORIES
HELP BUYERS FIND THE PRODUCTS THEY NEED FAST.

WE BEAT ANY PRICE!
MAC TALK
CPU's:
POWER PC & POWER PC Upgrades
Quadras & Powerbooks
All models available
DISPLAYS: Apple, SuperMac, NEC, RasterOps, Radius, Sony and others.
SCANNERS: Microtek, Umax, HP, Sharp & More.
PRINTERS: Apple, HP, NewGen, GCC.
MODEMS: Global Village
DEALERS AND INTERNATIONAL SALES WELCOME!
800-622-5557
(818)880-6116
FAX
(818)880-6103
22941 Ventura Blvd., Suite H991
Woodland Hills, CA 91364
CIRCLE 540 ON READER SERVICE CARD

SOMETHING FOR NOTHING



Free Catalog Of Used Macintosh Computers and Peripherals
While Mac outfits come and go, we just keep on doing what we do best. We've been refurbishing and selling used computers for 11 years. *Your satisfaction is guaranteed with us!*
1-800-821-3221
Call Anytime!
PO Box 4059
Logan, UT 84323-4059
International (801) 755-3360
Fax: (801) 755-3311
Sun Remarketing, Inc.
CIRCLE 424 ON READER SERVICE CARD

OVER
1/2 MILLION
ACTIVE BUYERS FIND
WHAT THEY ARE
LOOKING FOR
IN THE
MACWORLD
SHOPPER SECTION.
Macworld SHOPPER

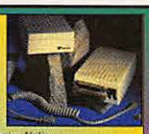
Other World Computing

(800) 275-4576
M-F 9am - 8pm CST and Sat. 11am-4pm
Internat'l (815) 338-8658
Fax (815) 338-4332
224 West Judd St.
Woodstock, Illinois 60098

We Will Meet or Beat any Nationally Advertised Price!

School, Government and Corporate POs Accepted!

Hard Drives



We offer both external and internal hard drives specifically for the Macintosh Computer. All drives include:
- 30mb of ShareWare and FreeWare
- System 7.1 installed
- All necessary cabling
- Anubis award winning SCSI Formatting Utility
- Internal drives also include the necessary mounting and connecting hardware.

30-Day Money Back Guarantee
2 Year Warranty on Drives From 170-340mb.
5 Year Warranty on Drives From 540-1800mb.

Quantum	Internal / Ext.
170mb	$189 / $239
270mb	$289 / $319
340mb	$329 / $359
540mb(LPS)	$429 / $479
540mb(EMP)	$489 / $539
1080mb	$779 / $829
1800mb	$979 / $1,029

SIMMS

Macintosh 30 pin Simms as low as $29
Powerbook Static Memory Modules starting at $69
Give us a call for the best pricing on 1,2,4,8,16 and 32 meg SIMM modules for all Macintosh and PowerMacintosh Computers. We also carry a full line of 2-20 meg modules for PowerBooks and Duos.

All memory from OWC is covered by a LIFETIME WARRANTY!

PowerBook Expansion

Quantum GLS 170mb. Drive.....$289
Quantum GLS 256mb. Drive.....$359
PB 2.5" AC Power Case.....$59

Supra

FaxModem v.32bis 14.4bps.....$259

2.5" PB Drives Have a 1 Year Warranty!

CD-ROM

CD-ROM DRIVES

Apple CD300i external	$399
Apple CD300i (internal)	$349
NEC MultiSpin 3Xp (external)	$499
NEC MultiSpin 4X (external)	$949

CD-ROM DISCS

Xplora I: Peter Gabriel's Secret CD-ROM World $59.95
Groliers Multi-Media Encyclopedia (new edition) $89.95
Random House Unabridged Dictionary $69.00
Mac Cocktail $49.95
Call for a complete listing of CD-ROM titles to be faxed or mailed to you.

NEW!KS Labs Alacrity CPU Boosters

Increases CPU and Graphics speed of your Centris 610, Centris or Quadra 660av, Quadra 650, and Quadra 800 by as much as 40%. No soldering or special skills required and the Alacrity Boosters are easily removable.
Only for C610, C-Q660av, Q650, Q800 $159

This Months Specials!

NCD OCR Scanner $79
Lets you take printed text directly into the Mac. Text only.

Mass Micro QI-24 24-bit Nubus Video Capture Card
The QuickImage 24 card allows you to preview and capture 24-bit color or 8-bit grayscale images from a wide range of NTSC or PAL video input sources, including camcorders, VCRs, videodisc, and still video cameras via the built in composite and S-Video inputs. QI-24 can capture 24-30 Frames Per Second. The QI-24's QuickTime Compatible and System 7 Savvy.
$65 with any other purchase $79 purchased separately

Call for the best pricing on the new Power Macintosh Systems and PowerPC Macintosh Upgrades!

CIRCLE 553 ON READER SERVICE CARD

L O W E S T P R I C E S G U A R A N T E E D

Power Macintosh CPUs

PowerPC 6100/66 8/160	$1698
PowerPC 6100/66 8/250/CD	$2098
PowerPC 7100/66 8/250	$2648
PowerPC 7100/66 8/250/CD	$2898
PowerPC 8100/80 8/250	$3785
PowerPC 8100/80 8/250/CD	$3988



PowerPC Logic Board Upgrade Available Call Us!

Power Mac Upgrade Card	$695
PowerPC 6100/60 Logic Bd	$1085
PowerPC 7100/66 Logic Bd	$1498
PowerPC 8100/80 Logic Bd	$1798

Mac CPUs

Q 610 8/160	$1299
Q 610 8/230	$1698
Q 610 8/230/CD	$1759
Q 650 8/230CD	$2059
Q 660AV 8/230	$1729
Q 660AV 8/230/CD	$CALL
Q 950 8/0	$2769
Q 950 24/1GB	$4119
Q 840AV 8/230	$CALL
Q 840AV 8/230 W/CD	$2999



PowerBooks



Duo 230 4/120	$1399
Duo 250 4/200	$1779
Duo 250 12/200	$2139
Duo 270c 4/200	$CALL
Duo 270c 12/200/Modem	$CALL
Duo 280 4/200 NEW!	$CALL
Duo 280c 4/200 NEW!	$CALL
Duo Dock FOR 230/250	$439
Duo Dock FOR ALL DUOs	$499
PB 145B 4/80	$1297
PB 165 c 4/120	$1759
PB 165 4/80	$1559
PB 165 8/160	$1729
PB 180 4/120	$CALL
PB 520 4/160 NEW 040	$CALL
PB 540c 4/320 NEW 040	$CALL

Monitors

Apple 14 Color Plus	$309
Apple 14" Color Trinitron	$389
Apple 14" AV	$629
Apple 17" Color	$989
Apple Multiple scan 20"	$1929
Sony 17SE Color Monitor	$1198
SuperMac 17 T Color	$989
SuperMac 20" Plus Monitor	$1539
SuperMac 20- TXL	$2349



Video Boards

Spectrum Power 1152	$1189
Spectrum 24 seriesIV	$839
Radius 24XP	$455
Radius Precision Pro 24x	$1369
Radius Precision Pro 24xk	$ 755

Apple Printers

StyleWriter II	$279
Color StyleWriter PRO	$659
Personal LaserWriter 320	$898
LaserWriter Select 360 (10 PPM)	$1448
LaserWriter 360 Fax Modem	$298
LaserWriter Pro 630	$1989
LaserWriter Pro 810	$4298



Hewlett Packard

HP DeskWriter 320 NEW!	$299
HP DeskWriter 560c	$589
HP DeskWriter 310 w/CSF	$389
HP LaserJet 4 ML	$989

Let us Do Your Custom Config.

Apple HDs

Fujitsu PB 240 MB HD	$349
Toshiba PB 340 HD	$569
Quantum 250 MB HD 3.5"	$259
Seagate 500 MB HD 3.5"	$479

Peripherals

Global Village PP Gold	$279
Global Village pp Mercury	$359
Apple Express Modem	$299
Geoport Adaptor	$139
Memory for all mac's	save
PowerBook Battery	$69
U-max Scanners	CALL
Micronet 88MB Rem. Drive	$399
Apple PB carrying Case	$49
ClarisWorks Bundle	$129

Look For Monthly Specials Highlighted In Black

Prices reflect cash discount & subject to change w/o notice

Mon-Fri 9:00 To 6:00 *Since* 1988
1941 Freeman #B
Signal Hills, CA 90804
Fax (310) 498-0032

Mac *Express* U.S.A
(310) 498-1230

CIRCLE 443 ON READER SERVICE CARD

MacBYTE



Buy • Sell • Trade Macintosh Computers

Preowned Macs with Warranty
Cash For Your Mac or Peripheral
Low & High End Custom Setups

800-432-BYTE

Open Monday—Saturday • 22775 PCH, Malibu, CA 90265 • FAX 310-317-1583

CIRCLE 428 ON READER SERVICE CARD

PRICE BREAKERS

72 DPI
WYSIWYG

The Video Works
25 Beta Ct, San Ramon, CA. 94583
800-838-1031

MITSUBISHI COLOR MONITOR

FG6601	$345.00
CRT Size	16"/15" View
Resolution	832 x 624
Dot Pitch	0.26mm
Colors	Millions



CIRCLE 403 ON READER SERVICE CARD

Your Desktop Publishing Multi-Media Video-CD Production Source

1-800-429-7779

Fax: (714) 375-6397
Voice: (714) 375-6390

MacCare INCORPORATED

Prices Are Subject To Change Without Prior Notice

MACINTOSH

PPC 6100/60 8/250 CD	$2150
PPC 6100/60AV 8/250CD	$2375
PPC 7100/66 8/250	$2650
PPC 7100/66 AV 8/500CD	$3895
PPC 8100/80 8/250CD	$3995
Quadra 950 8/230	$2750
Quadra 800 8/230	$2350
Quadra 800 16/1G	$3250
Quadra 840av 8/525	$2950
Quadra 840av 8/1G	$3350
Quadra 650 8/230	$1840
Quadra 650 8/500	$2090
Quadra 660av 8/230	$1575
Quadra 610 8/230	$1588
Quadra 605 4/80	$857
POWER BOOK 180C 4/80	$2149
POWER BOOK 165C 4/80	$1549
DUO 270 4/240 EXPRESS M	$2899

MULTI-MEDIA

Sony 900E Recorder	$Call
Phillips CD Rom Recorder	$5995
Media Pro 100	$Call
SONY BETA CAM UVW 1800	$Call
RADIUS VIDEO VISION	$2975
Sony V-Deck	$1695
RasterOpps Media Time	$1575
Call For Any Multi-Media Product!!!!!!	

FILM RECORDERS/ NETWORKING

AGFA PCR II	$Call
Polaroid CI5000	$5250
JVC KY-F30U	$Call
Tele Video Conferencing Plug & Play	
Pier to Pier Communication	$3795

PRINT PRODUCTION

Laserwriter Pro 600 8m	$1495
Kodak Color Ease	$6495
QMS Color Script (Wax)	$2895
Data Products 11x17	$3650
Dye-Sub Printers	$Call

CIRCLE 405 ON READER SERVICE CARD

LIMITED ADVERTISING BUDGET?

Macworld Shopper offers a great way to reach 550,000 active shoppers.

Macworld SHOPPER

Memory is a Terrible Thing to Waste!!!

With **SimmStack™** you can:

- Use your 30-pin SIMMs in your 72-pin Mac
- Convert one 72-pin SIMM slot into two slots

30 pin TO 72 pin SIMM CONVERTER

SAVE Money on Memory!!!



Call Now To Order!
(800) 209-7126

Easy To Install

Simply plug old SIMMs into **SimmStack™** and plug into 72- pin slot of your Mac. 100% Compatible.

SAVINGS

Beat the high cost of memory by utilizing existing memory in your new system. Enables you to recycle your old memory.

SimmStack™ is available for most 72-pin Macs including PowerPC Macs

Also Available:
72 pin SIMM
Slot Doublers

SERMAX CORPORATION
New York, NY
Tel: (212) 410-1597
Fax (212) 410-0452

MasterCard VISA

Guarantee: We Stand Behind Our Products! All products carry a 30 day money back guarantee.

CIRCLE 598 ON READER SERVICE CARD

MEMORY TRADERS

WE BUY USED MEMORY

ANY QUANTITY - ANY SPEED

256K
512K
1MB
2MB
8MB
4MB
16MB
30 PIN OR 72 PIN

POWERBOOK 2MB-10MB
VRAM
IIFX SIMMS

7215 Arlington Road, Suite 202
Bethesda, MD 20814
800-315-7807 301-215-7807
FAX 301-907-7542

CHEAPER THAN "DOUBLING"
TRADE IN FOR NEW SIMMS

WE BUY PC/WORKSTATION/ MINICOMPUTER MEMORY

CIRCLE 409 ON READER SERVICE CARD

Attn: IIfx and IIci Owners

Accelerate your Mac IIfx and IIci with Fusion Data's TOKAMAC accelerators. • 20-50% faster than a Quadra 950. • Buy at super low factory direct prices • 30 day MBG • Lifetime warranty • Toll Free tech support • 1992 MacUser Editor's Choice "Best accelerator of the year!"

Fusion Data Systems TokaMac
8920 Business Park Drive
Austin, TX 78759
(800) 285-8313
(512) 338-5326
(512) 338-1276 FAX

Macworld SHOPPER



HOT SHOPPER PRODUCT CATEGORIES
HELP BUYERS FIND THE PRODUCTS
THEY NEED FAST.

MAC Xtra! Delivering The Knockout Punch On High Prices!

POW! MEMORY UPGRADES

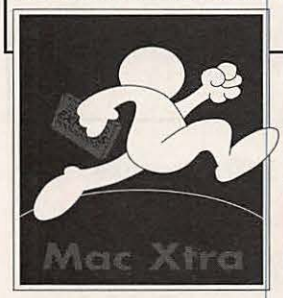
1x8x80	$40
2x8x80	$73
4x8x80	$145
4x8x80 II/IIx	$155
16x8x70 (Low Profile)	$619
1x8x80fx	$42
4x8x80fx	$155
16x8x80fx	$629
4MB 72 pin (70NS/60NS)	$145/$151
8MB 72 pin (70NS/60NS)	$296/$300
16MB 72 pin (70NS/60NS)	$612/$615
32MB 72 pin (60NS)	$1,259
Newton-2MB	$289

POP! POWERBOOK MEMORY

PB 100-6MB	$265
PB 140/170-4MB/6MB	$165/$239
PB 160/180-4MB/6MB	$152/$225
PB 160/180-8MB/10MB	$299/$369
PB 165C/180C-4MB/6MB	$165/$269
PB 165C-8MB/10MB	$335/$385
PBDUO 210/230-4MB/6MB	$165/$215
PBDUO 210/230-8MB/12MB	$305/$562
PBDUO 210/230-14MB/20MB	$645/$979
PBDUO 210/230-28MB	$1,569

WHAM! MODEMS

Supra 5014LC 14.4 S/R Fax	$165
Supra 2400	$59
SupraV.32bis Powerbook Fax	$229
Supra 14.4 S/R Fax (w/cable/software)	$225
Zoom AMX 2400 bps	$68
Zoom FXV 2400/9600 S/R Fax	$129
ZoomVFXV 14.4 v.32bis S/R	$175





SOK! ACCELERATORS

DAYSTAR Universal Powercache

030 33/33 w/FPU	$289/$379
030 50/50 w/FPU	$439/$565
Turbo 040 33 w/cache	$829
Turbo 040 40 w/cache	$999
128K Cache for Turbo 040 Accelerators	$172

POW! DRIVES

Rumi 1.2 Ext/Rumi 1.2 Int	$1,109/$1,089
Rumi 170 Ext/Rumi 170 Int	$299/$219
Rumi 85 Ext/Rumi 85 Int	$279/$209
Rumi 240 Ext/Rumi 240 Int	$335/$279
Rumi 525 Ext/Rumi 525 Int	$679/$609
Rumi CD-ROM	$299
Rumi Optical 128 MB w/5 cartridges	$995
Rumi 44MB SyQuest w/cartridge	$289
Rumi 88MB SyQuest w/cartridge	$469
Rumi 105MB/C SyQuest w/cartridge	$445
Rumi 2GB DAT Drive	$1069
Rumi 8GB DAT Drive	$1209

POW! MISCELLANEOUS

256K / 512K VRAM	$20/$38
Tool Kit (Simms Inst. Kit)	$7
PowerBook Tool Kit	$6.50
SIMMdoubler/SIMMchanger	$137/$98
LC/ LC II FPU	$55
LC III FPU	$65
Classic II FPU/Color Classic FPU	$55/$48
Duo Dock/Performa 600 FPU	$59
Centris FPU	$315
TI Microlaser Upgrade	$54
HP 4MB/HP 8MB	$175/$355

POP! SYQUEST CARTRIDGES

SyQuest 44MB Cartridge	$59
SyQuest 44MB Preformatted	$64
SyQuest 88MB Cartridge	$93
SyQuest 88MB Preformatted	$98
SyQuest 105MB Cartridge	$79

SOK! MEDIA

Optical Cartridges

128 MB (Verbatim)	$32
650 MB (Verbatim)	$85
1.2GB/512K (Verbatim)	$112
1.3GB/1024K (Verbatim)	$112

Bernoulli Cartridges

44 MB	$97
90 MB	$105
150 MB (5 Pack)	$459

WHAM! SHIPPING

Overnight Delivery	$7
UPS	$6
Phone:	(206) 455-0786
Fax:	(206) 455-3448

International Orders–24 Hours a Day

MAC Xtra
1075 Bellevue Way N.E. Suite 114,
Bellevue, WA 98004
Phone: (206) 455-0786
Fax: (206) 455-3448

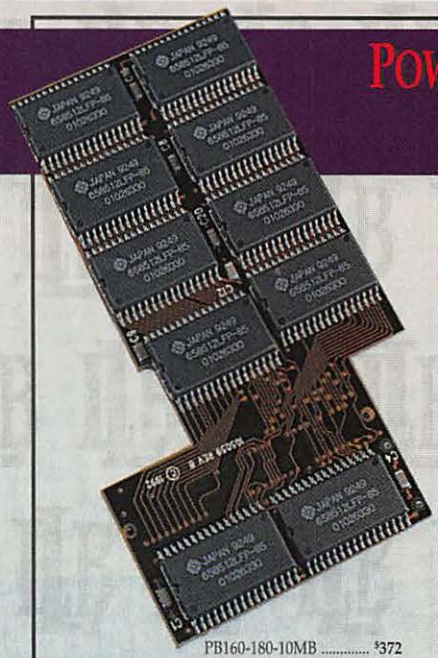
We accept MasterCard, VISA & Discover •
Returns subject to approval and restocking fee•
Prices subject to change
7:00 AM to 6:00 PM M-F 9:00 AM to 4:00 PM Sat. PST

CALL: 1-800-553-4230

CIRCLE 561 ON READER SERVICE CARD

INTRODUCING MEMORY

POWERBOOK MEMORY AS LOW AS $155



PB160-180-10MB $372

PB140-170-4/6	$169 / $245
PB160-180-4/6/8/10	$155 / $229 / $305 / $372
PB165C-180C-4/6/8/10	$169 / $272 / $332 / $389
DUO 4/6/8/12/14/20/28	$169 / $219 / $309/$565 / $649 /$985 / $1575

ACCESSORIES

Battery Charger Conditioner	$79
Long Life Battery 140-180c	$59
AutomobileAdapter 100-180 / DUO	$58 / $69
Newer Technology DUO Micro Dock SCSI / Color	$135 / $259
Co-Star Stingray Track Ball	$85
Keytronic Keyboard / KensingtonTurbo Mouse 4.0	$129 / $106
Wacom ARTZ/ Action Mouse 2 Button ADB	$315/$45

SCANNERS / PRINTERS

HP IICX	$999
We Sell Hewlet Packard Printer Supplies!	CALL
UMAX UC630 LE	$769
Microtek ScanMaker II / IIXE	$685/$925
LabelWriter II PLUS	$240
Citizen Notebook II Color Printer	$378
LaserWriter 810 4MB / 8MB Memory	$309 / $549
HP Printer Memory 4MB / 8MB	$179 / $359

MEMORY

1x8x80	$40
1x8x100	$39
1x8x80 (fx)	$42
2x8x80	$73
4x8x80	$145
4x8x80 (fx)	$155
4x8x80 (II,IIx)	$155
16x8x80 (Low Profile)	$625
16x8x80 (fx)	$635

CENTRIS-LC III-QUADRA

4MB-70ns / 4MB-60ns	$145 / $153
8MB-70ns / 8MB-60ns	$297/$300
16MB-70ns non-composite	$616
16MB-60ns non-composite	$619
32MB-60ns	$1212

VIDEO RAM / MATH COPROCESSORS

Video RAM 256K / 512K	$20 / $38
16MHz LC / Classic II	$59
16MHz Color Classic	$49
25MHz LC III	$69
35MHz Performa 600 / Duo Dock FPU	$65
Centris FPU	$319
MicroMac SIMMdoubler	$137
MicroMac SIMMchanger	$98

Ask about our Lifetime Warranty on all our memory products. Prices and availablity are subject to change.

Rumi SYQUEST DRIVES AS LOW AS $289



105MB SyQuest $445

88c (R/W 44) SyQuest $469

Rumi SYQUEST DRIVES

Rumi 44MB SyQuest *Includes FREE Cartridge*	$289
Rumi 88c (R/W 44) SyQuest *Includes FREE Cartridge*	$469
Rumi 105MB SyQuest *Includes FREE Cartridge*	$445
Rumi 270MB SyQuest *Includes FREE Cartridge*	$599

Rumi HARD DRIVES

Rumi 85MB Int / Ext Quantum	$209 / $279
Rumi 170MB Int / Ext Quantum	$219 / $299
Rumi 270MB Int / Ext Quantum	$289 / $339
Rumi 540MB Int / Ext Quantum	$545 / $619
Rumi 1.0GB Int / Ext Quantum-Empire	$879 / $939
Rumi 1.2GB Int / Ext Quantum	$1089 / $1109
Rumi 2.0GB Seagate Barracuda Ext	$2269
Rumi Powerbook 210 Int Toshiba	$409

SYQUEST $59

SyQuest 44MB Cartridge/Formatted	$59 / $65
SyQuest 88MB Cartridge/Formatted	$94 / $99
SyQuest 105MB Cartridge	$80
SyQuest 270MB Cartridge	$85

Rumi DAT DRIVES Includes Tape*

Rumi 2.0GB DAT Drive w/Retrospect*	$1069
Rumi DDS/2 8.0GB w/Retrospect*	$1209

Rumi CD-ROM DRIVE . $299

Rumi OPTICAL DRIVE

Includes 5 Verbatim Cartridges
Rumi 128MB Optical Drive $995

MORE DRIVES

PLI 1GB Mini Array External	$2139
PLI 2GB Mini Array External	$2899
PLI 128MB 3.5" Optical(Fujitsu Mech)	$1015
PMO Sierra 1.3GB Optical	$2789
Q Drive 270Mb Int/Ext	$290/$360
Q Drive 340Mb Int/Ext	$335/$405
Q Drive 540Mb Int/Ext	$535/$605
Q Drive 1080Mb Int/Ext	$980/$1050
FWB SCSI JackHammer	$649
FWB CD-ROM ToolKit	$69

SONIC AS LOW AS $92



Sonic Micro SCSI PowerBook... $237

Sonic Ether 10T/Thin-II/LC	$92
Sonic Micro SCSI PowerBook	$237
Sonic FriendlyNet 10T/Thin	$53
Sonic Starbase T9	$198
Sonic HubLite 5 port	$145
Sonic PowerBridge	$92

MODEMS



Supra v.32bis S/R Fax 14.4 w/ C & S	$225
Supra v.32bis S/R Fax 14.4 LC w/ C & S	$165
Supra 2400 Modem ONLY	$59
Supra 2400 Modem S/R Fax 9600 w/ C & S	$139
Supra v.32bis PowerBook 14.4	$229
Supra 28.8 External w/C & S	$325
Global Village Teleport / Powerport (Bronze) 24/96/48	$97
Global Village Teleport / Powerport (Gold) 14,400	$299
Global Village Teleport / Powerport (Mercury) 19,200	$329
U.S. Robotics Sportster 14.4 S/R Fax	$237
Prometheus PowerBook 14.4 w/Voice	$309
Zoom Pocket 14.4 w/Voice	$239
Zoom 14.4 w/Voice	$189

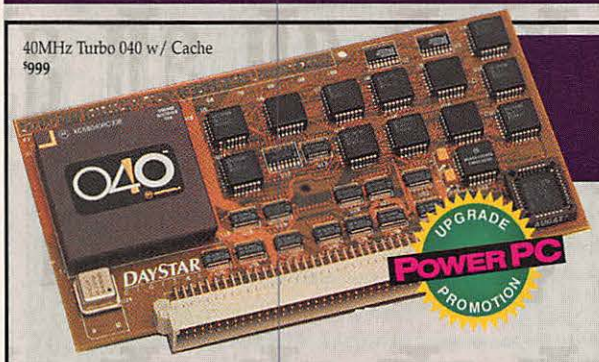
FAX 206-454-7302

Educational/Government 1-800-848-1424

Fortune 1000 Companies 1-800-848-1418

CIRCLE 563 ON READER SERVICE CARD

AT PRICES YOU WON'T FORGET



40MHz Turbo 040 w/ Cache
$999

TURBO 040 ACCELERATORS AS LOW AS $649

40MHz Turbo 040 with cache	$999
33MHz Turbo 040 with cache	$829
33MHz Turbo 040i with cache (NO FPU)	$649
128k Cache for Turbo 040's	$172
Value 040i 33MHz (No FPU)	$649
Value 040 33MHz	$829
Value 040 40MHz	$999
PowerPC 601 66Mhz	$1559
PowerPC 601 88Mhz	$2075
PowerPC 601 1MB Cache Card	$519

CENTRIS & QUADRA 040 ACCELERATORS

Image 040 40MHz	$1599
Quadra 040 40MHz	$999

CALL FOR ALL DAYSTAR PRODUCTS

Excellent MacWEEK MAY 17, 1993

DAYSTAR DIGITAL

VERBATIM AS LOW AS $23



128MB 3.5" Optical	$30
128MB 3.5" Optical, Apple Format	$36
600 / 650MB 5.25" Optical (512 b/s / 1024 b/s)	$85
1.2 / 1.3GB Optical (512 b/s / 1024 b/s)	$112
DC2120 w/QIC80	$19.50
4mm 90m / 60m	$11.50 / $8.90
8mm 112m	$10
CD-Recordable 640/74Min. (For use in Recordable CD-ROM Drives)	$23



KOMAG MEDIA

Komag 128MB optical disks are 100% certified defect free. Fully formatted with a limited lifetime warranty. Meet ISO 10090 standard. Made in the U.S.A.

128MB 3.5 -inch optical disks	$28
600MB 512 bytes/sector	$79
1..2GB 512 bytes/sector	$99
1.0GB 512 bytes/sector	$95

BERNOULLI MEDIA

Bernoulli 40MB Cartridge	$97
Bernoulli 88MB Cartridge	$107
Bernoulli 150MB Cartridge Single	$99
Bernoulli 150MB Cartridge 5 Pack	$462

SONY MEDIA

1.3 / 1.2GB Optical	$135
650 / 600MB Optical	$109
128MB 3.5" Optical	$46

SONY 3.5" DISKS

3.5" DD/3.5" Color / Hard Case	$7.50 / $14
3.5" HD/HD Mac Formatted	$12 / $13.50

SONY 1/4" DATA CARTRIDGES

1/4" Mini D/C 120MB / 150MB / 250MB	$18 / $20 / $26
1/4" Mini QIC-80 120MB Formatted	$23
1/4" D/C 525MB	$30
1/4" D/C 2.65GB	$49



SONY PCMCIA CARDS

SRAM Card 1MB / 2MB	$225 / $369
Flash Card 2MB / 4MB	$269 / $469

SONY CD-R

650MB/74 Min.	$25
553MB/63 Min.	$23

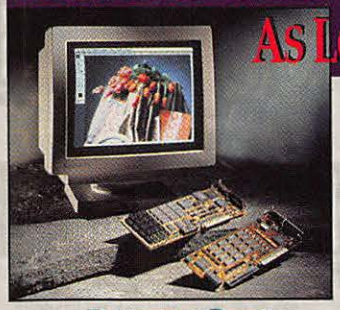
SONY 4mm DAT

4MM 60M 1.3GB	$13
4MM 90M 2GB	$15
4MM 120M 4GB	$24
Cleaning Cartridge	$12.50

SONY 8mm DAT

8MM 15M 600MB	$12
8MM 54M 2.4GB	$14
8MM 112M 5GB	$16
Cleaning Cartridge	$28

RASTEROPS MONITORS AS LOW AS $949



RASTEROPS®
THE ART & SCIENCE OF COLOR™

DUO DOCKS

Duo Mate 8	$269
Duo Mate 16SC	$559

MONITORS / VIDEO

PaintBoard Turbo 20"/16"/13"	$999
PaintBoard 8Li /20"/16"/13"	$339
PaintBoard Lightning	$829
24STV	$769
24Mx	$499
24XLTV	$2699
Movie Pak 2	$1539
Movie Pak 2 Pro Suite	$3479
RasterOps Clearvue Color 17" Monitor	$949
RasterOps Sweet 16 Monitor	$979
RasterOps 20" MultiScan Color Display	$1619
RasterOps 20T Color Monitor	$2479
Sony 1730 MultiScan	$1099
Sony 17SE1	$1249
Sony GDM 2036s 20" MultiScan	$2039

THE LLB COMPANY, INC.

300 120th Avenue NE
Bldg 1, Suite 120
Bellevue, WA 98005
(206) 454-7258

"With customer Service Guaranteed. Depend on LLB for Quality, Service and Value"

- **Airborne Express Overnight $6 and up**
- First quality New, Brand Name products
- P.O.'s accepted upon approval
- All major credit cards accepted with no surcharge.
- Credit card not charged until order is shipped
- Orders received before 7:30 pm Eastern time weekdays shipped same day
- We export to most countries in the world
- All returns require approval and are subject to a restocking fee
- Prices subject to change
- Open 7 am to 6 pm M-F. 9 am to 4 pm Saturdays



Call 1 - 800 - 848 - 8967

PERIPHERAL 800 256-6581



Standard SIMMs

1 Megabyte	40.00
2 Megabyte	73.00
4 Megabyte	145.00
8 Megabyte	329.00
16 Megabyte	599.00

Video RAM

4 Bit to 8 Bit Upgrade (Mac II/IIx cards)	24.00
256K Quadra 700/900, Performa 46X VRAM	19.00
256K Quadras, LC 520 VRAM	20.00
256K Centris, LCIII, Performas VRAM	20.00
512K VRAM for LC, LCII, IIvx, IIvi, DuoDock, and Performas	36.00

68882 FPU Boards

25 MHz for Macintosh LC	55.00
20 MHz w/2 slots for Mac IIsi	119.00
25 MHz for Mac Classic II	55.00

Cache Cards, Etc.

128K Cache Card for LCIII and Performa 450	159.00
w/25 MHz FPU	209.00
IIsi 64K Cache Card	159.00
IIci 64K Cache Card	125.00
IIsi 2-slot Card and 68882	119.00

Math Coprocessors

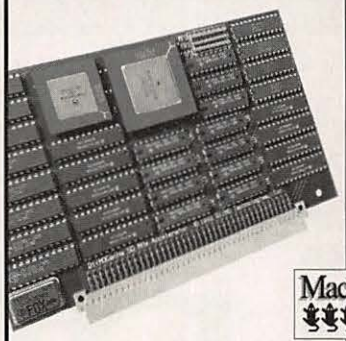
68882 16 MHz FPU	39.00
68882 20 MHz FPU	45.00
68882 25 MHz FPU	49.00
68882 33 MHz FPU	59.00
68882 50 MHz FPU	99.00
68881 16 MHz FPU	45.00

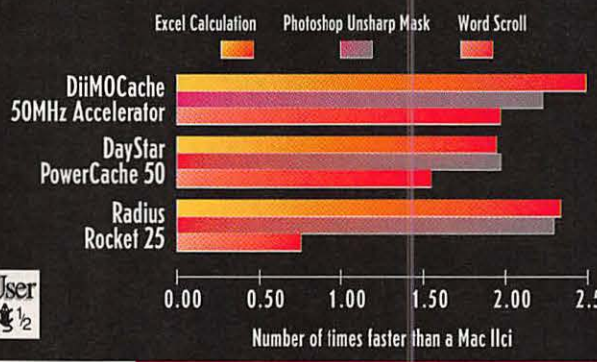
Miscellaneous

LaserWriter Pro 810 4 MB upgrade	275.00
LaserWriter Pro 810 8 MB upgrade	549.00
T.I. MicroLaser 1 MB	49.00
Mac Classic 1 MB Board	75.00
68851 16MHz PMMU	89.00
if requested, MODE 32 software included free w/PMMU	
Mac Portable 3 MB Card	369.00
Mac Portable 4 MB Card	399.00
Mac Portable 5 MB Card	449.00

Due to volatility in the market all prices and availability are subject to change without notice.

DiiMOCache 50MHz Accelerator $445





MacUser ★★★★½

SAVE MONEY! Peripheral Outlet will buy back your old memory at great prices! Call for details.

NEW PRODUCTS!

LaserWriter Pro 810 4 MB Upgrade board	275.00
LaserWriter Pro 810 8 MB Upgrade board	549.00
PowerBook Duo 20 MB/28 MB Modules	949.00/1349.00
All sizes PCMCIA cards for Newton	Call For Pricing!

72 Pin Memory *for the new Macs!*

	80ns	70ns	60ns
4 Megabyte	141.00	145.00	151.00
8 Megabyte	285.00	295.00	299.00
16 MB-Non Composite		619.00	619.00
32 MB-Non Composite		1249.00	1279.00

PowerBook Memory

	100	140/170	160/180	165c/180c	Duos
2 MB	95.00	95.00	---	---	---
4 MB	172.00	149.00	155.00	155.00	195.00
6 MB	249.00	209.00	229.00	229.00	215.00
8 MB	---	---	289.00	299.00	319.00
10 MB	---	---	375.00	379.00	---
12/14 MB	---	---	---	---	569/649
20/28 MB	---	---	---	---	949/1349

Newton PDA Upgrade Products

512K Static RAM Upgrade	125.00
1 Megabyte Static RAM Upgrade	169.00
2 Megabyte Static RAM Upgrade	289.00
2 Megabyte Flash Card Upgrade	259.00
4 Megabyte Flash Card Upgrade	425.00
8 Megabyte Flash Card Upgrade	749.00
16 Megabyte Flash Card Upgrade	1375.00

Speed up everything you do by up to 400% with this 50MHz 68030 accelerator by DiiMO Technologies. Awarded 4½ Mice in MacUser's April 93 Accelerator Review, the DiiMOCache 50MHz 68030 Accelerator outperformed not only DayStar's PowerCache 50MHz but also most of the 68040 25MHz accelerators. And it costs less too! For the LC, LCII, LCIII, II, IIx, IIcx, IIci, IIvx, IIvi, IIsi, SE/30, and Performa 600 and 400 series. Call for adapter prices.

DiiMOCache 50MHz 68030 Accelerator
without FPU $445.00 with FPU $519.00

68040 PROCESSOR WITH FPU AS LOW AS $249.00
(25MHz, WITH 'LC' TRADE IN) $299.00 WITHOUT TRADE
FOR THE CENTRIS/QUADRA 605, 610, 650, AND 660AV, AND THE PERFORMA 475/476 AND LC 475.
33MHz FOR QUADRA 650 & LC 575 - $399.00
40MHz- $699.00 Heat Sink- $19.00

TOLL FREE TECH SUPPORT
LIFETIME WARRANTY ON ALL MEMORY PRODUCTS
ORDER BY 6:30 PM CST FOR SAME DAY SHIPPING*
OVERNIGHT DELIVERY FROM $8.00 *some restrictions apply

PERIPHERAL OUTLET, Inc.

327 East 14th, PO Box 2329 • Ada, Oklahoma 74820
405/332-6581 FAX 405/436-2245 • AppleLink-PERIPHERAL
HOURS: Monday-Thursday 7AM-7PM CST, Friday 7AM-6PM

NEW! INTERNATIONAL TOLL FREE NUMBERS: France- 0590 1997, UK- 0800 962 058

CIRCLE 454 ON READER SERVICE CARD

DataCarts for Syquest Drives

Lifetime Warranty
Money Back Guarantee
Special Offer

DataCart 45
1 Pack ..... $58.
5 Pack ..... $55.

DataCart 88
1 Pack ..... $89.
5 Pack ..... $86.

Komag Optical Disks

128MB ..... $29.
600MB ..... $85.
1GB ..... $102.

Memory Merchants
Quality Removable Storage
(800) 799-DISK
(3 4 7 5)
4 Shratton Ave., San Carlos, CA

CIRCLE 539 ON READER SERVICE CARD

ACCELERATORS/FPUs



GIVE YOUR CENTRIS 610 A 40 MHz BOOSTER SHOT!

	INT/FPU
40MHz 040 **Centris 610**	$299/$399
Mobius Speedster 25MHz	$399/$499
33MHz w/128K cache	$499/$699
25MHz 030 **Mac SE**	$129/$178
25MHz 020/FPU/16K cache **LC**	$99
25MHz 030/FPU/16K cache **LCII**	$129
33MHz 030 **Mac II**	$188
Apple Cache Card **Mac IIci**	$49
Cache Card 256K **PowerMac**	$249
68040 FPU **Q605,LC475,C610**	$249*
(*with 68LC040 trade-in)	
68882 FPU **LC I-III, Duo**, etc.	$42-49
68851 PMMU w/Mode32 **Mac II**	$89
32-bit **SIMMs** 70ns 4/8MB	$149/299

CONNECT TECHNOLOGIES
Since 1986
18004 Sky Park Circle, Irvine CA 92714
714-261-2800
Visa/MC No Surcharge; Gov't./Corp./Educ. P.O.
One year min. warranty on all products.

Dynamic Engineering

PowerBook & Duo **Accelerators**
MacPortable Memory, HDD, Batteries
Mac & PC Systems & Accessories
PowerBook 100 Batteries $89
PLI 88/105/270 Syquest **HP** Printers & FAX
From PAL to **PowerPC** Simms...We have Memory
435 Park Dr., Ben Lomond, Ca. 95005 (P)408-336-8891 (F)408-336-3840
VISA MC P.O.
(408) 336-8891

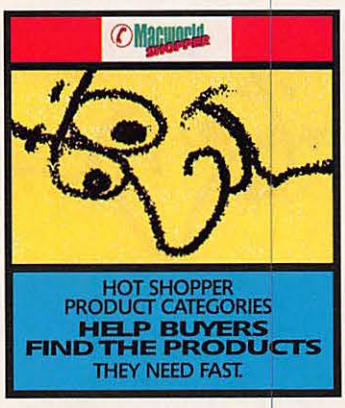
CIRCLE 411 ON READER SERVICE CARD

SOURCE INTERNATIONAL
Silicon Valley's
FIRST CHOICE
for
Computer Memory
(415) 323-6059
Fax (415) 326-3552

CIRCLE 592 ON READER SERVICE CARD

WANTED: USED SIMMS
TOP $$$ PAID
(Dealers welcome)
256K-512K-1MB-2MB PB
(310)459-4591
FAX (310) 454-8474

CIRCLE 410 ON READER SERVICE CARD



Your Next E-Mail Note Could Sound Great. No need to type a message—Just Say It! • Capture your voice with our hardware & software product line. • Complete solutions for EVERY Macintosh. • 100% Compatible with your favorite software. (not just e-mail) • 30 day MBG • A Great Value!

Special: $55 SW or $100 HW/SW
Call us to order and for more info.

Heart Computer, Inc.
113 Kenway, Rockwall, TX
(214) 771-7511

MAC MEMORY, *CALL FOR LOWEST PRICE*

NEW POWER PC MEMORY LIFETIME GUARANTEE

30 PIN SIMMS
1X8-80/70
1X8 FX
2X8-80/70
4X8-80/70
4X8 PAL
4X8 FX
8X8-70
16X8-70

72 PIN SIMMS
1X32-70/60 4MB
2X32-70/60 8MB
4X32-70/60 16MB
8X32-70/60 32MB
NON COMPOSITE

VRAM
256K VRAM ,
512K VRAM
4 & 8 BIT
VRAM SETS
1MB VIDEO ZIPS

DRAM
256K DIPS ,
1MB DIPS

POWER BOOK
100:
2MB,4MB,6MB
140,145,170
2MB,4MB,6MB
160,165,180
4MB,6MB,8MB,10MB
165C,180C
4MB,6MB,8MB,10MB
DUO 210,230,250,270C
4MB,8MB,12MB,
14MB, 20MB,28MB
FPU
68882-25,
68882-33
PMMU CHIPS

WE ACCEPT M.C, VISA & DISCOVER. UNIVERSITY, GOVERNMENT AND CORPORATE P.O 'S WITH APPROVED CREDIT

MEMORY FOR ALL PRINTERS

1-800-662-SIMM (7466)

DATA MEMORY SYSTEMS INC.
15 UNION ST. LAWRENCE , MA. 01840
TEL. 508-683-2325 ESTABLISHED 1963 FAX 508-975-5232

CIRCLE 447 ON READER SERVICE CARD

LIMITED ADVERTISING BUDGET?

Macworld Shopper offers a great way to reach 550,000 active shoppers.

Macworld SHOPPER

Sentinel PowerBook™ Security

NEW! From Secure-It

Stop PowerBook™ theft with the Kāblit™ Sentinel

Dual Security Features:

- Prevents theft by securing your PowerBook computer to desks, tables, chairs, etc.
- Secures your disk drive, preventing tampering and unauthorized data access
- Simple system for quick and easy installation.
- Portable; goes with you wherever you take your PowerBook



Secure peace-of-mind at the office, at home, the airport, and anywhere else you and your PowerBook travel.

Padlock Security Provided by Master® Lock

For more information call 800-451-7592... Secure-It 18 Maple Court, East Longmeadow, MA 01028

The particular Master Lock Trademarks used are trademarks of the Master Lock Company and are used by Secure-It, Inc. under license.

CIRCLE 574 ON READER SERVICE CARD

MUSIC FOR EVERYONE!

Both programs compatible with MIDI but MIDI is not required.



SONGWORKS

NEW! Your songwriting partner automatically notates your melody, suggests chords, suggests endless tune ideas, aligns lyrics, plays, transposes, prints. $125.00

PRACTICA MUSICA

Your personal music tutor. Provides ear training and music theory from beginning to advanced. Includes textbook. $125.00

ARS NOVA • 1-800-445-4866, FAX 1-206-889-0359 • Box 637, KIRKLAND, WA 98083

CIRCLE 595 ON READER SERVICE CARD

Family Heritage File™ Genealogy. New Version 3.3! Most powerful and easy genealogy program on Mac. Rated "BEST" by Macworld. Designed by genealogy professionals. • Stand alone • Graphic Pedigree, Descendants, Family Group, Individual, Marriage, Surname • Unlimited History • Sorted Lists • Export to WP/data base/ modem • GEDCOM compatible • Jewish/LDS features. $149 + 5 s/h. Ask about Family Heritage Bundle. Visa/MC. Demo $7. Free Lit Pak.

Star•Com Microsystems
Windsor Park East
25 West 1480 N., Orem, UT 84057
801/225-1480

Claire

The Personal Music Coach



Music Education Software that Listens to You!

"Claire could forever change the way musicianship is taught."

MACWORLD MW★★★★★

$129⁹⁵ Order Direct
1-800-557-2633 Ext531

OPCODE
3950 Fabian Way Suite 100
Palo Alto, CA 94303

CIRCLE 501 ON READER SERVICE CARD

Family Roots™ Genealogy. Do it YOUR way! Huge variety and capacity for your family history. Make pedigree charts, descendants charts, person sheets, group sheets, indexes and much more. Customize to your own preferences. Standard Mac interface. Call for FREE information. Satisfaction guaranteed. MC/Visa/AE.

Quinsept
Box 216
Lexington MA 02173
617/641-2930
800/637-ROOT



HOT SHOPPER PRODUCT CATEGORIES
HELP BUYERS FIND THE PRODUCTS
THEY NEED FAST.

LXR•TEST BEST IN TESTING

Highest-rated software for every testing environment: classroom, school, district, governmental, industrial and certification.

- ✓Item Banking & Test Production
- ✓Test Scoring w/Group Comparison
- ✓Mastery Reporting & Remediation
- ✓Survey Scoring and Analysis
- ✓Interactive Testing with Movies
- ✓Weighted & Multi-Response Grading
- ✓Accomodates All Question Types
- ✓Integrated Design (Mac & Windows)

Logic eXtension Resources 909•980•0046 Fax: 987•8706
7168 Archibald Ave. Suite 240
Rancho Cucamonga, CA 91701

CIRCLE 407 ON READER SERVICE CARD

Software Discounts Up to 80%!

Full Packages **(Students-Teachers-Schools)** *Latest Ver.*

PageMaker 5.0	**$299**	**Photoshop 2.5.1**	**$269**		
AutoCAD Rel.12	**$199**	**Illustrator 5.0.1**	**$199**		
Microsoft Word 5.1	$129	Director 4.0	$598	FrameMaker 4.0	$249
WordPerfect 3.0	129	Premiere 3.0	249	Coda Finale 3.01	250
Microsoft Excel 4.0	149	Claris Works	149	Freehand 4.0	249
Fractal Painter 2.0	199	FileMaker Pro	149	Morph 2.0	139
Statistica/Mac	695	Swivel 3D Pro	349	Authorware 2.0.1	995
Strata Studio Pro 1.0	495	StrataVision 3D	250	MiniCAD+4	250

Much much more.....Call for other titles....P.O. from schools are welcome!

VISA Orders (800) 377-9943 MasterCard
Software Plus Academic Inc.
50 E. Palisade Ave. #200, Englewood, NJ 07631 Info/Cat. (201) 569-6262

CIRCLE 538 ON READER SERVICE CARD

BIBLE MASTER™
NAS COMPUTER BIBLE

Get them all together...

King James Version

New International Version

New American Standard Bible

...the best selling translations!

...add on module
NAS Hebrew/Greek Dictionaries

...Just the fastest, finest, easiest to use, most powerful Bible software around...

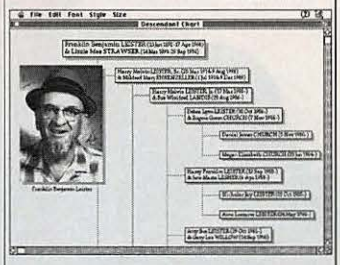
American Bible Sales
870 S. Anaheim Blvd.
Anaheim, CA 92805
1-800-535-5131

DISCOUNT SOFTWARE PRICES

CIRCLE 537 ON READER SERVICE CARD

REUNION®
the family tree software

"Features a well-thought-out and intuitive interface." 3½ *MacUser* Oct '90



Reunion quickly records and organizes your family information and images, creates large graphic tree charts, family group records, indexes, calendars, family histories, mailing lists, questionnaires, links and displays color pictures, shows how you're related to others, provides custom fields to record information unique to your research, calculates the day of the week you were born and your life expectancy, imports and exports data, and much more. The highest rated by *MacUser*.

To order, call MacConnection 1-800-334-4444.

For a free brochure and sample printouts, contact: *Now available for Mac and Windows.*

Leister Productions
P.O. Box 289, Mechanicsburg, PA 17055
Phone 717-697-1378 *Fax* 717-697-4373
CompuServe 71201,1105 *America Online* LeisterPro

STUDENT-TEACHER-SCHOOL DISCOUNTS!

****LATEST VERSIONS & FULL PACKAGES****

QUARK XPRESS V3.3 $299
PAGEMAKER V5.0 $249

4TH DIMENSION 3.1	$499	MINICAD + 5	$295
ASTOUND 1.0	$175	MORPH 2.0	$125
AUTOCAD R12 W/AME	$249	MS EXCEL 4.0	$159
CANVAS 3.5	$175	MS OFFICE	$269
CLARIS WORKS 2.1	$145	MS WORD 5.1	$125
CODA FINALE 3.01	$249	M.Y.O.B. W/ PAYROLL	$80
DIRECTOR 4.0	$595	NOW UTILITIES 4.0.1	$79
ENCORE 3.0	$299	PERSUASION 3.0	$169
FILEMAKER PRO 2.1	$169	PIXAR TYPESTRY 2.0	$135
FRAMEMAKER 4.0	$239	QUICKEYS 3.0	$79
FRACTAL PAINTER 2.0	$179	RADIUS ICD 20" MONITOR	$2099
FREEHAND 4.0	$195	RAY DRM DESIGNER 3.0	$185
KAI'S POWER TOOLS 2	$85	SOFT WINDOWS 1.0	$249
LOTUS ORGANIZER 1.1	$59	STRATAVISION 3D 3.0	$299
MAC TOOLS 3.0	$69	STRATA STUDIO PRO	$595
MACROMODEL 1.5	$699	SPANISH TRANSLAT. PRO	$499
MATHCAD 3.1	$169	WORD PERFECT 3.0	$125

MANY OTHER TITLES AVAILABLE!!

PHONE (800)289-3275

Call For FREE Catalog!!

VISA - MASTERCARD - AMEX - SCHOOL P.O.'S ACCEPTED!!

Products also available by Adobe and Symantec.

THE SOFTWARE SOURCE CO, INC.
2517 Hwy 35, Bldg N, Suite 201, Manasquan NJ 08736
Phone (908) 528-0030 Fax (908) 528-9378

CIRCLE 570 ON READER SERVICE CARD

COMPUTER GRAPHICS!

- Animation
- Desktop Publishing
- Photo Retouching
- Computer Illustration

1-800-225-9023
INTERNATIONAL FINE ARTS COLLEGE
1737 N. Bayshore Dr., Miami, Florida 33132
or Fax your inquiry to: (305) 374-5933
Classes start Jan. & Sept.

Name
Address
City State Zip
Phone ( )
Yr of HS Graduation Age

CIRCLE 565 ON READER SERVICE CARD

Bible Book Store On Disk

Full Featured, Fast and Friendly Bible Study software. As the leader in Bible Study software since 1981 we have continued to listen to our customers and provide them with the tools they need. We offer the most comprehensive line of Bible study tools available.
Call for FREE catalog.
Bible Research Systems
2013 Wells Branch Pkwy #304
Austin, TX 78728
800/423-1228
512/251-7541

Bachelor Explorer

New exploration tool for high school sophomores on up hoping to get a bachelor's degree. All majors (770+) and foreign lang. (100+) incl. Choose majors by career path, course title, subject area or any word(s). Choose schools (1750) by major, state, region, ethnic %'s, cost, size, religious affiliation, etc. Browse, search, select, list, sort and print. Macs w/hard drives needed. $59.95 (+ $3.00 postage).
Insearch, PO Box 14337
Albuquerque, NM 87191
1-800-883-0123

MAC Grade

$85.00 Plus $4.50 Shipping (CA/add $5.17 tax) MC/VISA

Take the work out of GRADING!

Save time and energy with MacGrade, the powerful grade manager that's fast, fun and exceptionally easy to use. Great reports and graphs. **New!** Version 2.2 has separate elementary and secondary/college editions.

Call (800) 795-0641

CalEd Software
P.O. Box 22913, Carmel, CA 93922
60 Day Unconditional Money Back Guarantee.

CIRCLE 406 ON READER SERVICE CARD

OVER **1/2 MILLION** ACTIVE BUYERS **FIND WHAT** THEY ARE **LOOKING FOR** *IN THE* **MACWORLD SHOPPER** SECTION.

Graphic Astrology

Professional quality software for all your astrological needs. Charting programs, Interpreters, atlases, fonts! State-of-the-art features, high-resolution output, superior accuracy.

FOR ASTROLOGERS AND STUDENTS OF ASTROLOGY

Call or write for FREE catalog!

Time Cycles Research
27 Dimmock Rd Waterford CT 06385
(203) 444-6641 • Fax (203) 442-0625

STUDENTS

Story Artist's Kit makes writing fun! Includes over 90 scenes & characters, color paint program, plus 3 exciting fonts:

Aladdin
DRACULA

TEACHERS

Try free demos of lesson planning, grading & testing software. Type fractions & roots with MathMaker Fonts, and see our new School Fonts.

800•669•6574
415•752•6506 fax

MOUNTAIN LAKE SOFTWARE, INC.

CIRCLE 478 ON READER SERVICE CARD

8113 Top Symbols & Trademarks of the World
MegaLogo

The first encyclopaedia of 8113 symbols, trademarks, logos, designed by more than 1000 designers from 47 countries between 1945 and 1982. Each logo (PICT format - 300 DPI) is retouched by hand and catalogued with 16 descriptive keys. Vocal Helps. English, French, Italian.

ONLY 3¢ each logo
Special Macworld Price $239
Free Delivery - Credit Cards Accepted

MEGA Service - Via Miani 13 - 00154 Rome (ITALY) - Tel. +39/6/5745945
Order FAX Line +39/6/5745946

CIRCLE 413 ON READER SERVICE CARD

Pacific HiTech is serving you the Internet on a silver platter

Pacific HiTech has culled the finest nuggets from the Internet and placed them on high-volume, all-in-one CD-ROMs. Each one is an instantly accessible resource of tools, programs and information. There is something for everyone, from the programmer to the occasional weekend mouse jockey. These discs are a great value for people who value their time.



$49.95 each

$5.00 S/H (U.S.)
$9.00 S/H (Int'l)



• Games • Periodicals
• Fonts • Demos
• Graphics • Virus Checkers
• Communications
• Applications • Development
• Disk Utilities



• Classical Books
• Games
• Educational Stacks
• Organizational Stacks
• HyperCard® Tools



• Arcade
• Adventure
• Bolo
• Cards
• Word games



• Source Code
• Compilers
• Interpretors
• Tools
• Information

Pacific HiTech Inc.
4530 Fortuna Way
Salt Lake City, Utah 84124

PACIFIC HI-TECH
INCORPORATED

1-800-765-8369

Int'l 801-278-2042
Fax 801-278-2666
Internet: orders@pht.com AppleLink: pht

CIRCLE 414 ON READER SERVICE CARD

Native Application for Power Macintosh

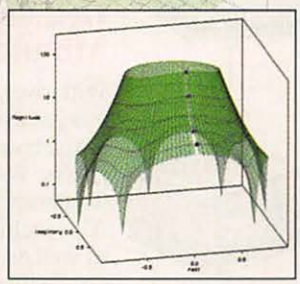
HiQ®
Real-World Math for Macintosh

Notebook Interface
- Interactive analysis and graphics in a WYSIWYG notebook interface
- Insightful 2D and 3D graphics
- Annotation for technical reports, journals, and presentations
- Publication-quality output

Numerical Analysis Power
- More than 600 math, scientific, and engineering functions
- Efficient algorithms with optimal convergence
- User-defined error tolerances

Problem Solvers
- Intuitive GUIs for solving sophisticated problems
- Automatic code generation

HiQ-Script
- A language built for scientists, engineers, and mathematicians

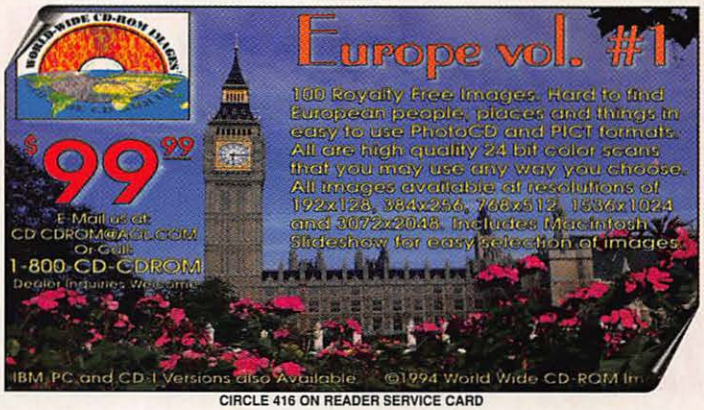


Call for FREE demo,
(800) 433-3488 (U.S. and Canada)

NATIONAL INSTRUMENTS
The Software is the Instrument
6504 Bridge Point Parkway
Austin, TX 78730-5039
Tel: (512) 794-0100
Fax: (512) 794-8411

© Copyright 1994 National Instruments Corporation. All rights reserved. Product and company names listed are trademarks or trade names of their respective companies.

CIRCLE 554 ON READER SERVICE CARD



CIRCLE 416 ON READER SERVICE CARD



CIRCLE 594 ON READER SERVICE CARD

CD-ROM COLLECTION *SPECIALS!*

Call for Catalog

Buy any 3 for $99 Buy any 5 for $129

Buy any 7 for $149 Buy any 12 for $199

ALL Titles In Stock WHILE Supplies Last

***New Grolier's MM Encyclopedia**
$395 retail $99 CD Link special
Includes 33,000 articles, maps, audio, video and animation from topics such as The Gulf War, Rise and Fall of the Roman Empire, World Communism, and much more.

World Atlas
$79 retail $49 CD Link special
More maps. More facts. And more easy to use features than any other atlas.

Desert Storm
$59 retail $39 CD Link special
Week by week look at the Gulf crisis as covered by Time. Including unique information previously unavailable to the public.

Supertoons
$39 retail $29 CD Link special
Contains 30 minutes of full color QuickTime movies featuring Superman. Complete with audio.

Space Shuttle
$79 retail $29 CD Link special
Visit the Johnson Space Center. Blast off, launch a satellite, walk in space from your own cockpit!

The Animals (San Diego Zoo)
$59 retail $39 CD Link special
Over 200 exotic mammals, birds and reptiles using movies, sounds and stories from one of the world's greatest zoos.

Word Tales
$59 retail $39 CD Link special
Help your children learn to spell. Discover a jungle and play games of words, letters and suprises.

Quicktoons II
$49 retail $29 CD Link special
An nastalgic QuickTime movie compilation of some of the best and timeless cartoon classics.

Oceans Below
$49 retail $29 CD Link special
Explore some of the world's most exotic underwater destinations. Contains over 200 video clips and 125 photographs.

US Atlas
$59 retail $39 CD Link special
All new and better than ever. Everything you ever wanted to know about the US.

Capitol Hill
$49 retail $29 CD Link special
It's Congress like you've never seen or heard before. A close-up of Congressional debates, powerful people and more.

Great Business Jokes
$79 retail $29 CD Link special
More than 175 business jokes delivered by pro comics. A must for business presentations.

The View from Earth
$79 retail $49 CD Link special
ThoThousand of colorful images and hours of audio and video narration. Based on "Voyage Through the Universe" series.

The Orchestra
$79 retail $49 CD Link special
See the instruments in an orchestra. Hear how they sound and learn how they are played. More than 500 CD Audio examples.

Funny
$59 retail $19 CD Link special
Based on Bran Ferren's award-winning motion picture. From Time-Warner Interactive group.

Mac Procuct Registry
$149 retail $49 CD Link special
A valuable sales and research tool. Contains more than 6700 product entries. Demos are featured.

AMERICAN EXPRESS Card VISA MasterCard
Call for Adult Catalog

CD Link 800-858-0311

Fax 818-785-3100
Ph: 818-785-2800
15500 Erwin St. #2002, Van Nuys, CA 91411

CIRCLE 430 ON READER SERVICE CARD

POSTERS MURALS BILLBOARDS BACKDROPS TRADESHOW EXHIBITS BANNERS

PRESENTATIONS POINT-of-PURCHASE DISPLAYS

THE ONLY FAST, EASY, ECONOMICAL WAY TO CREATE LARGE-FORMAT PRINT JOBS.

- Layouts up to 10,000 square feet
- Imports EPS, TIFF, Scitex CT artwork
- Drives any PostScript printer
- Fixed, custom and automatic tile sizes
- Variable panels, margins, gaps, overlaps, bleeds
- Hundreds of professional large-format production tools
- Supported by a network of service bureaus nationwide



1990 NOMINEE Macworld

"★★★★" Macworld 8/93 MacWEEK 2/93

For info call: (617) 338-2222 or fax: (617) 338-2223

Now at MacWarehouse! 1-800-255-6227

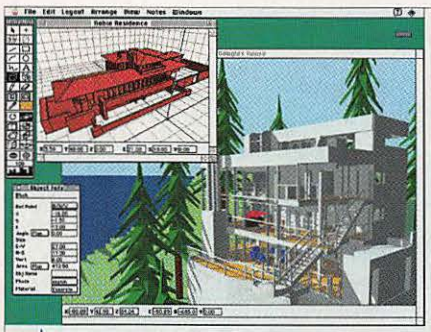
©1994 S. H. Pierce & Co. Ste. 323 Bldg. 600, One Kendall Sq., Cambridge, MA 02139

PosterWorks

POSTERS MURALS BILLBOARDS BACKDROPS TRADESHOW EXHIBITS BANNERS

PRESENTATIONS POINT-of-PURCHASE DISPLAYS

CIRCLE 513 ON READER SERVICE CARD



A Design Breakthrough ...intuitive 3D modeling

PowerPC Native or 68-K

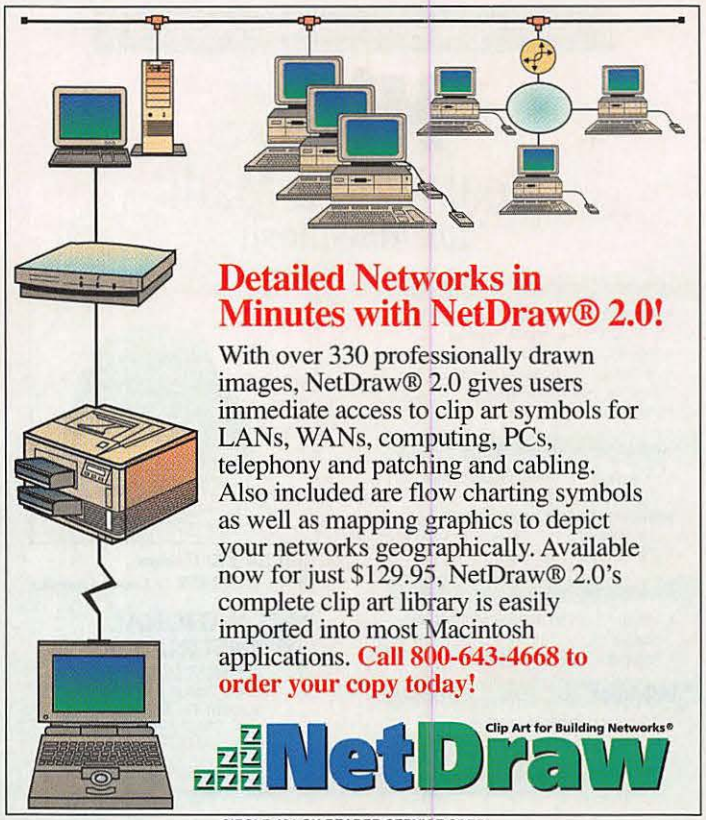
- easy, fast, intuitive 3D CAD
- 3D direct manipulation
- sketch in live 3D perspective
- object-based shadows
- fit, flip, snap to objects
- paste into openings
- sun studies, walkthroughs
- import/export DXF, PICT, etc.

DesignWorkshop™

Call Artifice: 503-345-7421 or fax: 503-346-3626

In Canada: 204-453-8111

CIRCLE 408 ON READER SERVICE CARD



Detailed Networks in Minutes with NetDraw® 2.0!

With over 330 professionally drawn images, NetDraw® 2.0 gives users immediate access to clip art symbols for LANs, WANs, computing, PCs, telephony and patching and cabling. Also included are flow charting symbols as well as mapping graphics to depict your networks geographically. Available now for just $129.95, NetDraw® 2.0's complete clip art library is easily imported into most Macintosh applications. **Call 800-643-4668 to order your copy today!**

Clip Art for Building Networks®

NetDraw

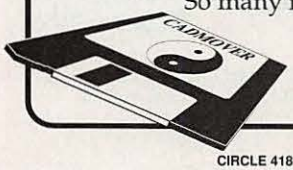
CIRCLE 461 ON READER SERVICE CARD

CADMOVER® - Release 4.0

New Formats, New Features, & More User Control

- New Formats Include: ClarisCAD, Presenter Professional
- Read MicroStation, Schema & Pro Engineer via EPSF
- No more add-on modules - get DDES2, STL & more free
- Check your drawings with the new Pan & Zoom Feature

So many improvements...so little space... so call for more information.



KANDU Software Corporation

Call 703. 532. 0213

CIRCLE 418 ON READER SERVICE CARD

MAPArt MAPS FOR GRAPHIC DESIGN

"Best Collection Map Category" Clip Art's Greatest Hits MacWorld, January 1994

"Fine Artwork" MacWorld 1992



World Maps

Continents

Major Countries with States & Provinces

US States with Interstates, State Highways, 3 Digit Zip Areas & Counties!

FULLY EDITABLE WITH ILLUSTRATOR, FREEHAND & OTHER PROGRAMS!

CARTESIA 5 S. Main St., Box 757 Lambertville, NJ 08530 Voice 609-397-1611 24 hr. FAX 609-397-5724

CALL FOR FREE CATALOG 800 334-4291

CIRCLE 417 ON READER SERVICE CARD

ALSO AVAILABLE ON CD-ROM

AdArt

Encapsulated Postscript Images

FEDERAL EXPRESS



REALTOR®

- Recycled Art
- Real Estate Art
- Flags of the World
- Cars & Light Trucks
- Logos & Trademarks, 1 - 11
- Int'l Symbols & Icons, 1 & 2
- Business Symbols Collection
- Safety & Packaging Collection
- Accents & Attention Getters Collection
- Also: Special Edition Vinyl Cutters Packages

FAX :802 878-1768 • INFO: 802-879-1164

800 255-0562

MasterCard VISA

Innovation Advertising & Design 41 Mansfield Ave • Essex Jct., VT 05452

CIRCLE 566 ON READER SERVICE CARD

Logo Design Software

Create logos like this in minutes; sell them for $75 - $500.

Logo SuperPower® is a large graphic database. You use one or more "design elements" and modify them to create world-class logos in minutes. There are **over 2,000 logo design elements** in the full package. Or, choose the basic package of 660+ elements. For the Mac: Requires FreeHand or Illustrator.

Logo SuperPower - basic
(660+ design elements).....$119

Logo SuperPower - full
(all 2,000+ design elements).....$279

To order, or for information, call

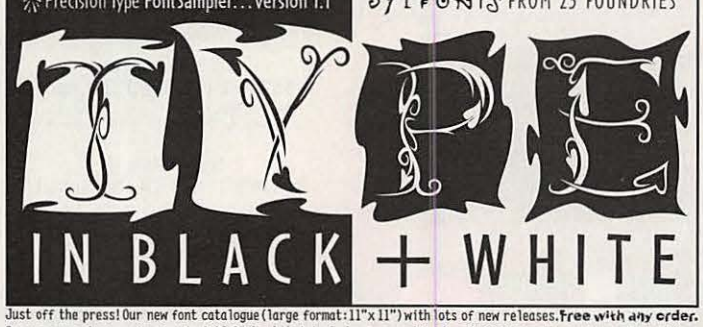
(800) 648-5646

Decathlon Corp. • 4100 Executive Park Dr. Cincinnati, OH 45241 Phone (513) 421-1938

CIRCLE 533 ON READER SERVICE CARD

Precision Type FontSampler...version 1.1

571 FONTS FROM 23 FOUNDRIES



Just off the press! Our new font catalogue (large format: 11"x11") with lots of new releases. **Free with any order.** Or, you can get your copy for just $6.95 (and that includes free updates) - add $2.50 for the postage and handling.

PRECISION TYPE: 47 Mall Drive, Commack NewYork. 11725. 5703. Fax: 516.543.5721. Phone: 516.864.0167 or 800.248.3668

CIRCLE 485 ON READER SERVICE CARD

Super Anatomy Collections
"...technically and artistically superior."*

LifeART™ Professional Medical Clip Art CD-ROM



Super Anatomy 1,2,3
Now Shipping!

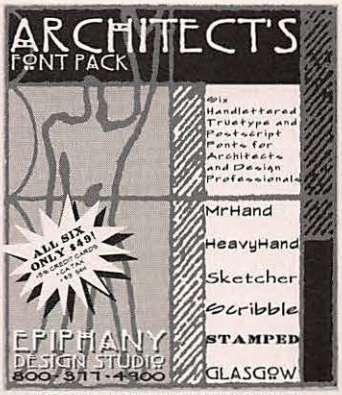
- 400 New Images
- 100% Compatible in all Mac Software
- Editable in Illustrator and MacDraw Pro!

TechPool Studios
Cleveland, Ohio
Tel: 216-291-1922
Fax: 216-382-1915

*Medical Software Reviews

FREE Catalog
800-LifeART
543-3278

CIRCLE 415 ON READER SERVICE CARD



CIRCLE 419 ON READER SERVICE CARD

FREE
MAC & IBM
SHAREWARE
100 CD SOFTWARE
CATALOG

SoftShoppe CD $46 Only!
The Ultimate Shareware Collection
SoftShoppe 32 Pages! ASP Member
POBOX 4437
CERRITOS, CA 90703
TEL: (310)802-1333
FAX: (310)802-1494

1-800-851-8089

CIRCLE 422 ON READER SERVICE CARD

Care4th® PRO
An ELECTRONIC MEDICAL RECORD SYSTEM and DATABASE with full printout support. Imagine your entire medical record shelf & much more in a lap or desktop Mac! Utilize clinical data in ways you could never have imagined. In 40 states and abroad, Care4th® Pro is the gold standard. Single & network versions available, starting well under $3000!
Med4th Systems, Ltd.
716 East Carlisle Avenue
Milwaukee, WI 53217
414/963-1985 Voice and Fax



James Heisig's
Remembering the Kana
Learn Japanese hiragana and katakana in 6 hours.

$89.99

Available Soon for DOS

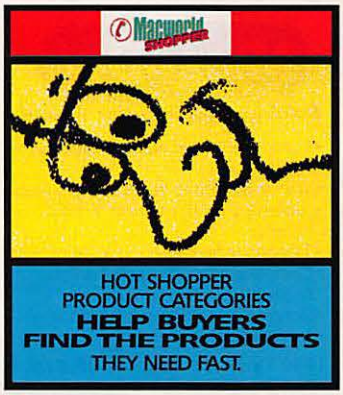
- Both the hiragana and the katakana presented in one package for **Mac**.
- Prints several types of flashcards and grid paper for review.
- Digitized sound lets you hear the pronunciation of each kana and all examples.
- On-screen flashcard review of the hiragana and katakana.
- Lessons automatically timed. On-screen help.
- Background information on the history and grammatical usage of the kana.
- Does NOT require KanjiTalk or the Japanese Language Kit.

Imagineer America Inc., 15317 NE 90th St., Redmond, WA 98052
Tel: **206 867 5790** Fax: **206 867 5792**

Imagineer

CIRCLE 421 ON READER SERVICE CARD

Medical Office Mgmt
TessSystem 3™ is a complete system for insurance processing, patient billing, accts receivable, patient transactions, report generation & much more. Single/multi doctor, single/multiuser. Flexible & very easy to learn. Optional electronic claims. From $2,995. New practice discounts available. Call Today!
Tess Data Systems, Inc.
14340 Torrey Chase Blvd, Ste 340
Houston, TX 77014-1021
800/218-TESS - Sales
713/440-9995, 713/440-6526 Fax



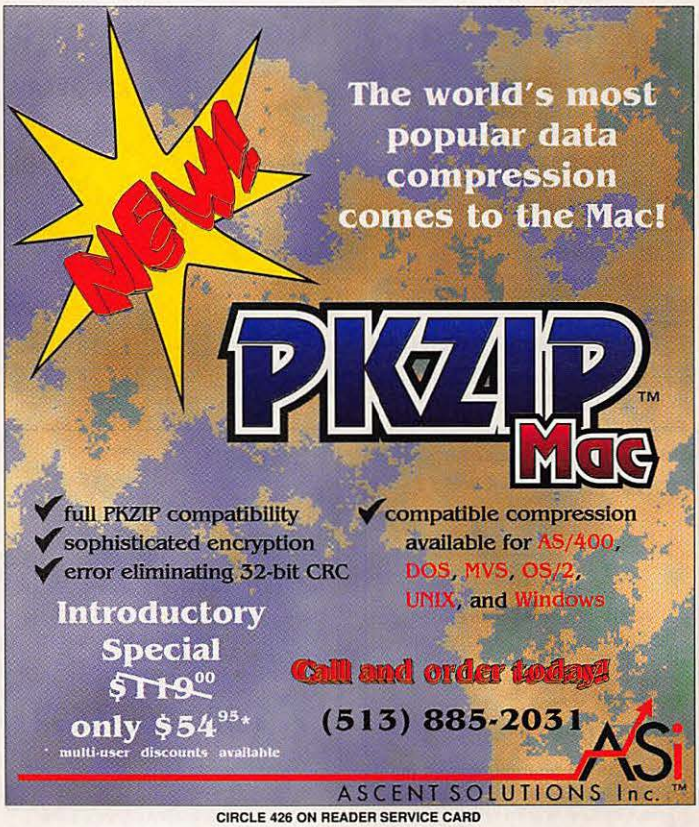
FORTRAN on the Mac

- ANSI standard FORTRAN 77
- VAX & Cray extensions
- Advanced debugging features
- Extensive code optimizations
- User-friendly Mac interface
- PowerMac & 68K available
- Background execution
- 2D & 3D graphics support
- C & Pascal compatibility
- Education discounts

800-252-6479

Language Systems Corp. • 100 Carpenter Dr. • Sterling, VA 20164
(703) 478-0181 • Fax: (703) 689-9593 AppleLink: LANGSYS

CIRCLE 423 ON READER SERVICE CARD



CIRCLE 426 ON READER SERVICE CARD

MACTRAN PLUS Ver.4.5
Sys 7 Comp INTEGRATED Made-for-Mac Devel System, Incl: Editor, Optimizing Compiler, Source level Debugger, Linker, Library Mngr, Profiler and Build Facility. Supports 68020/030/040 & 68881/2 native code. Significant Vax Fortran & ANSI 8x exts. High and Low Level tool box interface. Unltd Code seg size. *"I use it at home on my **MAC II**, on a **Quadra** in my Lab and on a **Powerbook** while traveling" Ole Vilman, Consultant Engineer.*
DCM Data Products
1200 Quail St, #280
Newport Beach, CA 92660
714-724-0802/1021
714-724-0803 FAX

ADOBE™

New, Lower Prices	Adobe List	FF Price
	$275	$187.50
All Fonts Ship Same Day	$205	$142.50
	$145	$96.50
$3 Overnight Delivery	$105	$72.50
	$80	$52.50

Call for Free Catalog
Fonts in a Flash™
(800) 435-1303
9:30-4:00 Central, M-F
No Surcharge

"We tried all the utilities and nothing worked. Total Recall recovered 100% of our data and returned it the same day. These guys are amazing!" — R.H. Dataviz, Inc.



"The Data Recovery Experts™"

- Class 80 Clean Room
- 1-3 Day Service-No Extra Charge
- Better than 94% Success Rate
- Recommended by Major Manufacturers

TOTAL RECALL™ 800.743.0594

Absolute Data Recovery! SINCE 1989

2440 Waynoka Rd. • Colorado Springs, CO 80915 • 719.380.1616 • FAX 719.380.7022

CIRCLE 458 ON READER SERVICE CARD

Slide Imagers®

- Slides & Overheads
- Kodak PortFolio Services
- Dye-Sub Output
- Large Color Posters
- Canon Fiery Lasers
- Slide Duplication
- 4x5 Neg/Pos/B&W
- Data Transfer to CD-ROM
- 48 Hour, $3.00 a slide

Overnight $4.95 Slides & Canons Digital Output

Photo CD™ Scans $.90

(800) 232-5411

22-7th St. • Atlanta, GA 30308 • 404-873-5353

CIRCLE 456 ON READER SERVICE CARD

MICRODOC

Macintosh Computer Repair

- Component level repair in less than 48 hours.
- We stock hard to find & custom parts.
- Same day parts shipping & most repairs.
- Telephone tech support on repair kits.
- Complete price list available upon request.
- School and corporate P.O. accepted.
- Dealers/Servicers only.

Serving the service industry since 1983—with great prices on parts and repairs.

CHECK OUT OUR PRICES

REPAIR PARTS
Exact replacement CRT:3 @$50
Exact replacement mouse cables
Complete analog repair kit with docs
Hard drive power supply from $49
Circuit board ICs, fuses & filters

LOGIC BOARD REPAIRS
LaserWriterII NTX - $199
MacII, SE, Classic, & Plus - $99
MacIIX, CX, SI, & ClassicII - $119
MacIICI, FX, & Quadra 700 - $179
Powerbooks from $119
Floppy drive repairs 800/1.4 - $69/$99

Prices are subject to change

1040 Tyinn #7/Eugene, OR 97402/(503) 344-5335/FAX (503) 344-5020

CIRCLE 482 ON READER SERVICE CARD

"If it hadn't been for DriveSavers, our information would have been lost forever."
-S.S., Sebastopol

DRIVESAVERS® DATA RECOVERY

As the only all-Mac data recovery company, we've saved more megabytes of Mac data than anyone else in the world. We're certified by every Mac drive manufacturer. Our proprietary techniques are so advanced we can rescue data others might simply abandon.

1-800-440-1904

Restoring data—and peace of mind—since 1989

400 BEL MARIN KEYS BL. • NOVATO, CA 94949 • FAX: 415-883-0780 • PH: 415-883-4232

CIRCLE 510 ON READER SERVICE CARD

MAC REPAIR

Mac Shop Northwest

- Apple™ Certified Technicians
- One-Day Service Turnaround*
- Hard Disk Repair & Data Recovery
- Up to 75% below Dealer Rates
- Component-Level Repairs
- Expert Advice and Prices by Phone
- Power Supplies & Logic Boards*
- Lifetime Repair Warranty*

Tel: 1-503-642-3456
*on many repairs. Visa/MC/AX. Fast overnight shipping available. We use genuine Apple™ parts.

FEDERAL EXPRESS

1-800-MAC-SHOP

CIRCLE 515 ON READER SERVICE CARD

HIGH IN DEMAND

DATA RECOVERY™

- High Success Rate
- Free Estimates
- Turnaround Available
- No Recovery, No Fee
- 24 Hour Turnaround

415.588.DATA

- MACINTOSH
- POWER PC
- DOS

HIGH IN DEMAND™
121 S. Maple Ave. Ste 9
South San Francisco, CA 94080
415.588.3282

CIRCLE 427 ON READER SERVICE CARD



THE ULTIMATE BBS

FREE ACCESS

NO CREDIT CARD NEEDED

- Talk with Singles/Couples
- Over 100,000 GIF, Shareware, Windows/DOS Files — updated daily!
- Unlimited Downloads • Call NOW!

USE YOUR MODEM TO DIAL

1-809-563-0116

Callers must be 21 or older! Long distance rates apply.

Notebook Thefts Skyrocket!

Why Take the Risk?



NOW "Insurance to Go"℠

The Risks	The Insurance
Theft - Fire	Premiums Start at
Power Surge - Lightning	$60 a Year
Earthquake - Accident	

1-800-722-0385

The Computer Insurance Agency, Inc.
6150 Old Millersport Rd. NE • Pleasantville, OH 43148

CIRCLE 523 ON READER SERVICE CARD

SAFEWARE

Insures Your Computer



The Computerowners℠ Policy insures you against **theft, fire, accidental damage, lightning even power surge!** Replace or repair for $49 a year. Available in the U.S. & Ontario.

1-800-800-1492

SAFEWARE, The Insurance Agency Inc.
2929 N. High St., PO Box 02211
Columbus, OH 43202

CIRCLE 522 ON READER SERVICE CARD

DIGITAL IMAGING

Slides	$3.75
4x5 chromes/negs	$16
Dye sub print/overhead	$18
Hi Res Scanning	$10

Quantity Duplication on Slides and Overheads

Show & Tell

39 W. 38th St., NY, NY 10018
212 840 2912 • 212 840 7953 (fax)

CIRCLE 550 ON READER SERVICE CARD

$19.00!!!

For all repairs plus parts and shipping. Maximum price guaranteed. Super fast turn-around. New and used hardware for sale. School orders welcome. Open 12 noon-5, 6:30-10pm eastern M-Sat. We buy dead Apples, Macs, PCs.

Arminius Pubs. & Prods. Inc.
8519 Orchard Ave.
Merchantville, NJ 08109
609/662-3420

You've tried Norton™, You've tried MacTools™ & Still No Data!

CPR&RS,™ will go where no software utilities has gone before! With state of the art techniques & proprietary software, CPR&RS,™ will surgically remove your data, without the hassle of filling out any unnecessary forms.

CPR&RS,™ services are recommended by most Major Hard Drive Manufacturers, System Manufacturers as well as the U.S. Dept. of Defense. We have a 98% Success Rate on all Storage Devices & Operating Systems.



CPR &RS, Inc.

Computer Peripheral Repair & Recovery Services, Inc.
11440 Okeechobee Rd. Suite 201
Royal Palm Beach, FL. 33411
800-765-9292
407-795-7266

CIRCLE 452 ON READER SERVICE CARD

DATA RECOVERY

- **Expertise in Macintosh** & virtually every operating system & storage device - including tape & removable media
- **24-Hour Worldwide Support** with on-site, weekend, and priority service
- **Professional Service Authorized** by major manufacturers



Ontrack DATA RECOVERY®

MN: 1-800-872-2599
CA: 1-800-752-7557

London: +44 (0)81 974 5522 • Germany: 0130-815-198 • France: 05 90 72 42
~ Ask about our referral programs ~

CIRCLE 459 ON READER SERVICE CARD

We can scan your 35MM slides & negs onto Photo CD
24 Hr Turnaround
as low as 60¢ an image
Photo CD™

1-800 WRITE CD
800-974-8323

CIRCLE 502 ON READER SERVICE CARD

Macworld SHOPPER



HOT SHOPPER PRODUCT CATEGORIES
HELP BUYERS FIND THE PRODUCTS THEY NEED FAST.

DUPLICATION FROM $.49
HIGHEST QUALITY MEDIA

From $.49 (5.25") and $.80 (3.50")
- All Diskette Formats
- Custom Labels
- Diskette Mailers / Accessories
- Assembly Services
- Generous Volume Discounts

FORMATTED DISKETTES

QTY 250	SONY VERBATIM	OEM GENERIC
3.50" DD	$.47	$.45
3.50" HD	$.57	$.53

- 10% Discount on First Order
- DOS, Macintosh, or Custom Formats
- Colored Media add $.05
- Private labeling / Volume Discounts

800-255-3142
Diversified Systems Group, Inc.
P.O. Box 1114, Issaquah, WA 98027

CIRCLE 496 ON READER SERVICE CARD

TeleFinder™ Bulletin Board System
GROUP EDITION BBS

The leading Macintosh BBS for business and education. First in quality and performance.

- "The best BBS available on any platform, at any price." - *MacUser (UK).*
- "Best Communications Software 1992" - *MacWorld Australia.*
- Multi-user chat, E-mail, ZMODEM file transfer, conferences, find file, and graphic user interface.
- Supports Mac and PC users.
- TeleFinder is $425 for unlimited users, includes host and user communication software.

Call for free eval disk!

Spider Island Software
4790 Irvine Blvd #105-347 Irvine, CA 92720
tel (714)669-9260 fax (714)669-1383
bbs (714)730-5785

CIRCLE 597 ON READER SERVICE CARD

COMPUTERWORLD's "5th Wave" Cartoon Mouse Pad



COMPUTERWORLD

COMPUTERWORLD brings humor to a mouse pad featuring a cartoon from "The 5th Wave" series by Rich Tennant. Not available in stores, this colorful foam-backed pad will keep your mouse clean and protect your desktop. Best of all, it's only $4.99*. Send your name, address and check or money order to **COMPUTERWORLD**, P.O.Box 9171, Framingham, MA 01701, Attn: Product Fulfillment. For credit card orders, call 1-800-343-6474.

*In U.S., for each unit ordered, add $1.25 for postage and handling; orders outside U.S. add $2.50 each. Residents of MA, CA, GA, NJ, and DC add applicable sales tax. Canada residents add G.S.T. C3MW3

SUPER MAT™
...the new comfort edge

The Best Way To Reduce Computer Noises and Vibrations

High-tech Super Mat dampens annoying noises and damaging vibrations, to create a safer, more pleasant workspace. Model for PowerMac, Quadra, Centris, Performa, LC and II Series.

Plus Super Mat:
- Protects CD-ROM & Hard Disks from vibration induced crashes and data loss
- Protects your desk from scuffs & scratches
- Fits neatly under most office equipment

Only $19.95
60-Day Money-back Guarantee
Add $4.75 Shipping/Handling, Cal. res. add 8.25% tax.



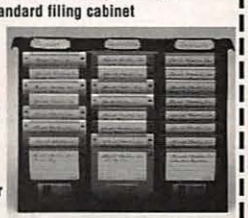
CALL 1-800-88-INOVA
Accept VISA MasterCard | 24 hr
Call or send check or M/O to "INOVA Tec"
1933 Davis St., Ste. 289, San Leandro, CA 94577

CIRCLE 581 ON READER SERVICE CARD

ORGANIZE & PROTECT

Solve Your Disk Storage Problems with the *Softstack*® 24

- Fits any standard filing cabinet
- Holds 24 Disks
- Only $14.95 (including shipping)
- *Special Offer:* Order 5 for $49.99



For larger quantities call for special prices

To Order Call: 800-361-9589

CIRCLE 431 ON READER SERVICE CARD

PROTECT YOUR MAC

Finest Quality, Custom-Fit !



8 Color Choices!

ALL FABRIC
- *Heat Ventilating, will not shrink or deteriorate with age!* • *Machine Wash & Dry!* • *All makes & models*
- *Custom orders!* • Tan, Navy, Royal Red, Maroon, Gray, Brown or Black.
- *100% Satisfaction Guaranteed!*
- *Outstanding service since 1983!*
- *Found a lower price? Call us!!*

Choose Monogramming or Heat Transfer of your Favorite Photo

11-30 Classic/II & Kybd (2pc)	$24.95	11-99 Adj.Kybd & Kypd (2pc)	$11.95
11-94 Color Classic & Kybd..	24.95	10-86 Mac Extended Kybd.....	9.95
11-84 LC, Mac14" & Kypd(2pc)	29.95	11-80 Mac 14" Color Display..	19.95
11-95 Centris610,14"&Kybd(2pc)	29.95	11-74 Mac 16" Color Display...	24.95
11-96 Centris 610 CPU Only..	15.95	10-37 Imagewriter II	15.95
11-77 Centris650,14"&Kybd(2pc)	29.95	11-93 LaserWriter Pro 600...	19.95
11-79 IIvx/Centris 650 CPU ..	15.95	11-98 LaserWriter Select 300..	24.95
11-97 Quadra 800 CPU	15.95	10-90 LaserWriter II	24.95
11-59 Quadra 900/950 CPU ...	19.95	11-25 Personal LaserWriter...	24.95
12-05 Quadra 840AV CPU.....	15.95	11-52 StyleWriter	15.95
12-06 DuoDock,14"&Kybd(2pc)	29.95	11-91 StyleWriter II	15.95
NEW! PowerBook Pouch.....	19.95	91-22 H-P DeskWriter/550.....	19.95
???? Don't see listed here??	CALL	SKIN Apple Keyboard Skins..	15.95

Add $4.00 Shipping & Handling (Check, MO, COD, VISA/MC) Specify Kybd

CO-DU-CO Computer Dust Covers
4802 W. Wisconsin Ave., Dept. MW, Milwaukee, WI 53208
800-735-1584 414-476-1584 • 476-9329 FAX

CIRCLE 455 ON READER SERVICE CARD

Educator's Shopping Guide!

FREE CD-ROM W/EVERY ORDER!



CD-ROMS



BRODERBUND
- Arthur's Teacher Trouble 34.95
- Carmen World Deluxe 49.95
- Just Grandma & Me 34.95
- Myst 47.95
- New Kid on the Block 34.95
- Tortoise and the Hare 34.95

DISCIS BOOKS—CLASSROOM VERSIONS
- Aesop's Fables 24.95
- Cinderella 24.95
- Mud Puddle 24.95
- Scary Poems for Rotten Kids 24.95
- Tale of Benjamin Bunny 24.95
- Tale of Peter Rabbit 24.95
- Thomas' Snowsuit 24.95



ORANGE CHERRY NEW MEDIA
- 20,000 Leagues Under the Sea 39.95
- Adventures of Pinocchio 39.95
- Beauty and the Beast 39.95
- Talking Classic Tales 39.95
- Talking Jungle Safari 39.95
- Time Traveler 59.95
- Wind in the Willows 39.95

SOFTWARE TOOLWORKS
- Capitol Hill 29.95
- Oceans Below 29.95
- San Diego Zoo: The Animals! 39.95
- Space Shuttle 29.95
- U.S. Atlas v.3.0 ..... 39.95
- World Atlas 3 Multimedia 39.95

TIMEWORKS
- Publish It! Easy 3.0 ..... 49.95

WAYZATA
- World Factbook 24.95
- CD-Fun House 24.95

SOFTWARE



BRODERBUND
- Carmen America's Past 29.95
- Carmen Time 29.95
- Carmen World 19.95
- Kid Pix 34.95
- Kid Pix Companion 24.95
- Print Shop Deluxe 47.95
- Spelunx/Caves of Mr. Seudo 28.95
- The Backyard 29.95
- The Playroom 29.95
- The Treehouse 29.95

CLARIS
- ClarisWorks Competitive Upgrade 69.95
- FileMaker Pro Upgrade 89.00
- MacWrite Pro Upgrade 69.00

DAVIDSON
- Kid Works 2 ..... 34.95
- Math Blaster Mystery 29.95
- The Cruncher 34.95
- Zoo Keeper 34.95

EDMARK
- Bailey's Book House 28.95
- KidDesk 24.95
- Millie's Math House 28.95
- Thinkin' Things 32.95

INTUIT
- Quicken 44.95



LAWRENCE PRODUCTIONS
- Discovering America 34.95
- Nigel's World 27.95
- The Lost Tribe 29.95

LEARNING COMPANY
- Bilingual Writing Center 169.95
- Math Rabbit 1 ..... 34.95
- Math Rabbit 2 ..... 34.95
- Reader Rabbit 1 ..... 34.95
- Reader Rabbit 2 ..... 34.95
- Reader Rabbit's Ready for Letters 34.95
- Super Solvers Midnight Rescue 34.95
- Super Solvers Outnumbered 34.95
- Super Solvers Spellbound 34.95
- The Writing Center 49.95
- Treasure Math Storm 34.95

MAXIS
- SimCity 2000 ..... 39.95
- SimEarth 29.95
- SimLife 29.95



MECC
- Amazon Trail 34.95
- DinoPark Tycoon 34.95
- My Own Stories 29.95
- Odell Down Under 34.95
- Oregon Trail 28.95
- Super Munchers/Number Munchers Bundle 29.95
- USA Geograph 28.95



MICROSOFT
- Creative Writer Academic 39.95
- Fine Artist Academic 39.95
- Microsoft Word Academic 84.95
- Microsoft Works Academic 99.95

QUALITY COMPUTERS
- SmartStart 49.95
- SmartStart Pro Version 79.95
- SmartVoice 49.95



ROGER WAGNER
- HyperStudio 2.0 ..... 109.95

SYMANTEC
- Norton Utilities 2.0 Academic 59.95
- SAM 3.5 Academic 39.95

TIMEWORKS
- Publish It! Easy 3.0 ..... 49.95

WEEKLY READER
- Stickybear's Early Learning Activities 34.95
- Stickybear Math Town 34.95
- Stickybear's Reading Room 34.95



HARDWARE

DIGITAL VISION
- ComputerEyes (B&W) 199.95
- ComputerEyes (Color) 299.95
- ComputerEyes RT 399.95

HEWLETT PACKARD
- ScanJet IIcx 949.95
- ScanJet IIp 499.95

LAPIS TECHNOLOGIES
- LTV LV 289.95
- LTV Portable 319.95



LOGITECH
- FotoMan Plus 549.95
- ScanMan Model 32 w/CatchWord Pro 249.95



QUALITY COMPUTERS
- Q Drive 60 MB 199.95
- Q Drive 170 MB 349.95
- Q Drive 340 MB (Conner Mechanism) 399.95

SUPRA
- SupraFAXModem 144LC 169.95

SPECIAL SPECIAL SPECIAL SPECIAL

CLARISWORKS 2.1 COMPETITIVE UPGRADE



Upgrade from any "Works" program to ClarisWorks, the highly rated integrated Macintosh program. ClarisWorks features: Word Processing, Dictionary & Thesaurus, Multiple Column Layout, Text/Graphics Rotation, WYSIWYG Display, Import & Export, Spreadsheet, Database, Mail Merge, Communications and much more!

$69.95

SPECIALS

SCANMAN MODEL 32 W/CATCHWORD PRO

$249.95





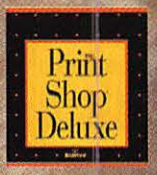
THE BACKYARD

$29.95

SUPRA FAX MODEM 144LC



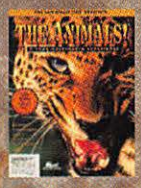
$169.95



PRINT SHOP DELUXE

$47.95

SAN DIEGO ZOO: THE ANIMALS



$39.95



PUBLISH IT! EASY 3.0

$49.95

SUPER MUNCHERS/ NUMBER MUNCHERS BUNDLE

$29.95



WHO WE ARE. Quality Computers has been a leader in the educational technology market for 10 years. When we started, everyone used Apple II's. Today, schools are using more Macs and PCs. But no matter what kind of computers schools use, we will be there to provide their needs. Call for your free catalog and issue of our educational newsletter.

IF YOU DON'T SEE A PRODUCT THAT YOU NEED, CALL FOR OUR COMPLETE CATALOG

WE WILL MEET OR BEAT ANY NATIONALLY ADVERTISED PRICE!

MENTION CODE MW64 WHEN ORDERING

VISA MasterCard DISCOVER American Express Card

SCHOOL P.O.S BY PHONE, FAX OR MAIL

1-800-777-3642

Quality Computers ™

20200 Nine Mile Rd. • St. Clair Shores, MI 48080 • 810-774-7200 • Fax 810-774-2698

Guaranteed lowest prices every day!



THE BEST DEAL IN CLIP ART

CLIP ART CD

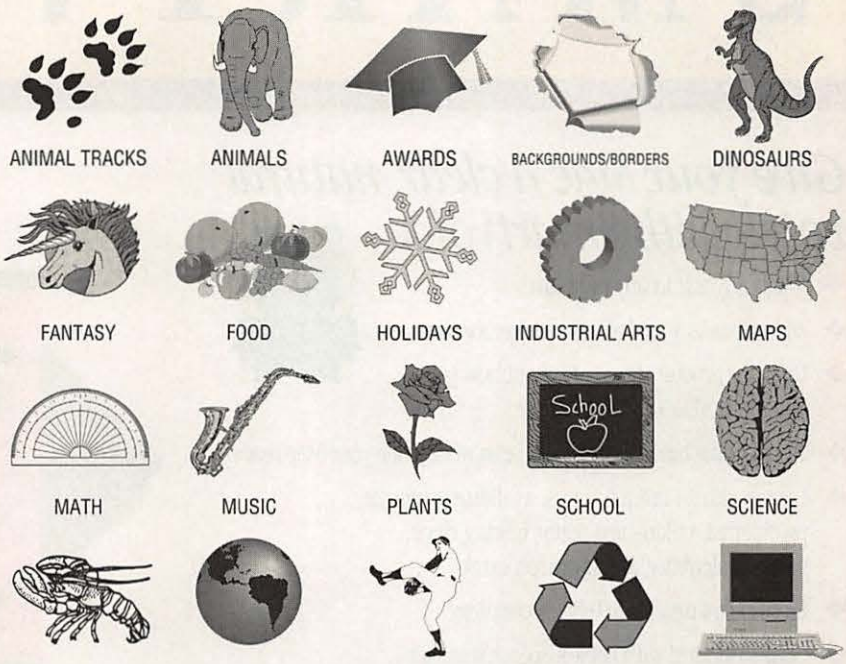
"I have purchased over 15 different clip art collections, and yours is truly the best!"

—Scott Goldstein

- Over 1200 high quality curriculum-oriented images, borders, and more!
- 20 different categories
- Pictorial Index & Catalog included
- PICT & EPS formats
- Easy-to-use
- 30 Day Money Back Guarantee
- Preferred choice of educators

ONLY $49.95

Also available on 3.5" diskettes. Ask for details!





FREE EDUCATIONAL CATALOG

Find out why Enhance is America's favorite journal & catalog of educational technology. Every year, over a million educators look to Enhance for grant writing tips, technical advice, product reviews, and now, to read how they can best meet the challenges of **Goals 2000.** Enhance is free! Call today, or clip and mail this order form.

Name _____

Address _____

City _____ State _____ Zip _____

Phone (_____) _____

Occupation: ❑ Educator ❑ Other _____

Title _____

QUALITY COMPUTERS

MacWorld Quality Computers • 20200 Nine Mile Rd. • St. Clair Shores, MI 48080

ORDER NOW AND GET



BONUS CD

WITH EVERY ORDER

The Q-ROM

Software Demos • Educational Games
Entertainment Games • Fonts
QuickTime Movies • Clip Art • Much more!

Tenth Anniversary

Find out what makes Quality Computers the leader in Educational Technology across America!

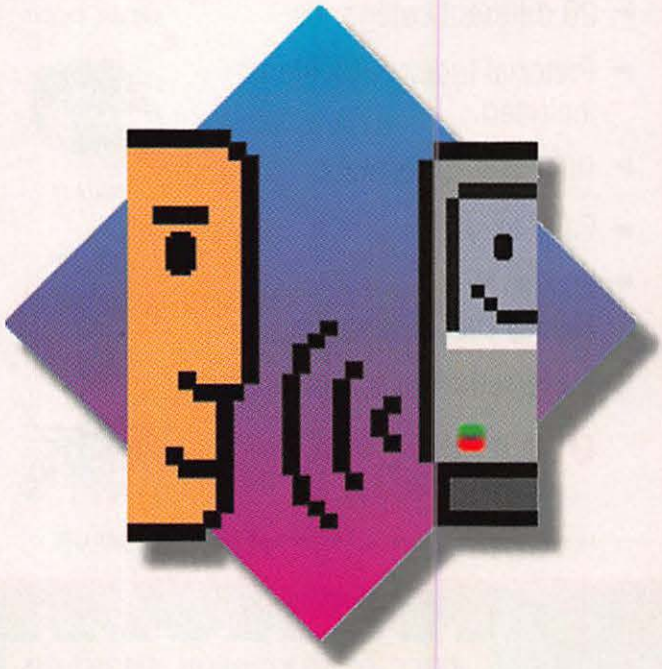
The cutting edge of Mac technology!

SMARTVOICE

Give your Mac a clear, natural voice with SmartVoice



- Reads any text in any program
- Add speech to your favorite word processor
- Great for proofreading—find out how your writing REALLY sounds
- Works in the background so you can work while your Mac reads
- Comes with 14 unique voices, a talking computer psychiatrist, talking text editor, talking clock, talking calculator, and more fun extras
- Uses Apple's new PlainTalk™ technology
- Comes bundled with Apple's SpeechManager™, MacinTalk 2™, and MacinTalkPro 2™*
- High-quality synthesized speech with realistic inflection and tone
- Speaks notification boxes from the Finder



HEAR APPLE'S PLAINTALK TECHNOLOGY FOR YOURSELF!

CALL 1-800-MAC-YACK!

1-800-622-9225

LISTEN ALONG WITH OUR SMARTVOICE DEMONSTRATION:

"If computers could talk, imagine the things they'd say! Welcome to the SmartVoice demonstration! The most powerful speech utility for your Macintosh. SmartVoice works within your word processor, so you can have your letters read back to you to check for clarity. SmartVoice brings the Power of speech to your Macintosh! Now you can see and hear the text on your screen . . ."



SmartVoice.....49.95



Crank It Up with Labtec Speakers.....24.95
Labtec Shielded Mini-Speakers for full-range voice reproduction. Batteries or adapter required.

Talking Software.....39.95 ea
Early Learning made fun through the power of speech synthesis! Three colorful packages available: Math, Phonics, and Music.

All require Speech Manager and MacinTalk 2 or MacinTalkPro 2 (included with Quadra AV models, or available separately with the SmartVoice package)

*MacinTalk 2 requires Mac Plus or better with System 6.0.6 or later and uses about 150K RAM. MacinTalkPro 2 requires Mac LC or better running System 7.0 or later and uses between 700K and 2.8 MB RAM depending on the voice selected.

High-quality voices require the use of MacinTalkPro 2.

™ "Apple," "MacinTalk," and "PlainTalk" are trademarks of Apple Computer, Inc.

FREE CD-ROM W/EVERY ORDER!



MENTION CODE MW64 WHEN ORDERING

VISA MasterCard DISCOVER AMERICAN EXPRESS Card

SCHOOL P.O.S BY PHONE, FAX OR MAIL

1-800-777-3642

Circle 263 on reader service card

Quality Computers™

20200 Nine Mile Rd. • St. Clair Shores, MI 48080 • 810-774-7200 • Fax 810-774-2698

The Only Guide You Need to Master the Mac Universe!

Over 300MB of Bonus Software on CD-ROM!



Macworld Complete Mac Handbook Plus CD, 2nd Edition is Loaded with Expert Advice, Product Profiles and 100s of Tips and Techniques

Covers System 7 Pro, Adobe Acrobat, & Apple's New AV Models

Here it is: the 800 page all-in-one handbook for all Mac users – beginners to experts, by Jim Heid, one of *Macworld* magazine's most popular columnists. From word processing and desktop video, to printers and surge suppressors, this completely updated and expanded guide is your key to mastering the Mac universe. Features a Bonus CD-ROM with over 300MB of dazzling software.

"Required reading for the power user – and anyone who wants to be one." – *Frank Casanova, PowerPC Product Manager, Apple Computer, Inc.*

ISBN: 1-56884-033-0
Price: $39.95 USA/$52.95 Canada
800 pages

30 Day No Risk Guarantee
Try this book for 30 days at absolutely no risk. If it doesn't help you get more out of your Mac, return it for a full refund.

IDG BOOKS

IDG Books Worldwide, Inc.
155 Bovet Road, Suite 310,
San Mateo, CA 94402
(800) 762-2974, (415) 312-0600
Fax (415) 358-1260

Order Risk-Free: 1-800-762-2974

For fastest service, fax your order to (415) 358-1280. Phone 8am to 5pm, PT, or complete and mail the order form. Also available wherever computer books are sold.

Yes! Please send me:

	Qty.	Price	Total
Macworld Complete Mac Handbook		$39.95	
UPS shipping & handling add		4.00/book	
Inquire about Rush delivery at extra charge		Rush	
CA residents add applicable county tax; IN & MA residents add 5% tax, NJ residents add 7% tax, IL residents add 8.25% tax, Canadian residents add 7% GST tax.		Tax	
		Total	

I Wish to Pay by:

❑ Check
❑ Visa/MC
❑ Amex
No CODs, U.S. funds only; payment must accompany order.

Card No. (include all numbers) Exp. Date
Signature (necessary to be valid)
Name Company
Street City State Zip
Area Code Phone Number

For volume discounts and special orders, please call Tony Real, Special Sales, at 415-312-0644.

MWB94

The Ultimate Mac Reference is Here!

Includes 8MB of Commercial Software & Shareware!



Find Out 1000 Things Apple Never Told You in *Macworld Macintosh SECRETS*™

National Bestseller

Here – complete with over 8MB of software – is the fact-rich book you need to get the most out of your Mac. Written by *Macworld's* own columnists David Pogue and Joseph Schorr, it features 1000 things Apple never told you, including hundreds of tricks and expert tips. With up-to-date coverage on all the latest Mac models, including the new Performas and Quadras. Also includes over 8MB of the hottest commercial software and shareware – over 40+ programs from Apple, Claris, Bitstream, and more!

"*(Macworld) Macintosh SECRETS* appears to be the newly definitive Macintosh reference work, replacing the venerable *'Macintosh Bible'* and Danny Goodman's graphically stunning but somewhat shallow *'Macintosh Handbook'*" – *Washington Post.*



ISBN: 1-56884-025-X
Price: $39.95 USA/$52.95 Canada,
752 pages

30 Day No Risk Guarantee
Try this book for 30 days at absolutely no risk. If it doesn't help you get more out of your Mac, return it for a full refund.

IDG BOOKS

IDG Books Worldwide, Inc.
155 Bovet Road, Suite 310
San Mateo, CA 94402
(800) 762-2974, (415) 312-0600
Fax (415) 358-1260

Order Risk-Free: 1-800-762-2974

For fastest service, fax your order to (415) 358-1280. Phone 8am to 5pm, PT, or complete and mail the order form. Also available wherever computer books are sold.

Yes! Please send me:

	Qty.	Price	Total
Macworld Macintosh SECRETS		$39.95	
UPS shipping & handling add		4.00/book	
Inquire about Rush delivery at extra charge		Rush	
CA residents add applicable county tax; IN & MA residents add 5% tax, NJ residents add 7% tax, IL residents add 8.25% tax, Canadian residents add 7% GST tax.		Tax	
		Total	

I Wish to Pay by:

❑ Check
❑ Visa/MC
❑ Amex
No CODs, U.S. funds only; payment must accompany order.

Card No. (include all numbers) Exp. Date
Signature (necessary to be valid)
Name Company
Street City State Zip
Area Code Phone Number

For volume discounts and special orders, please call Tony Real, Special Sales, at 415-312-0644.

MWB94

Join the CD-ROM Revolution!

We'll BEAT any advertised price on CD-ROM produc (some restrictions apply)



CD-ROM Drives

All drives are ready to run and are Kodak multisession compatible. Driver software and cable included. Specify #981 MAC to SCSI or #982 SCSI to SCSI cable (except NEC).

Buy a CD-ROM drive from us, and add a bundle up to 90 days after purchase!

CD Tech-T400A $359
#5100—AT-320ms/DTR-300k/sec

CD Tech-T3401 $479
#1824 —AT-200ms/DTR-327k/sec

Pioneer DRM604X $1299
#978—AT-300ms/DTR-612k/sec

Plextor DM5028 $429
#5028—AT-245ms/DTR-335k/sec

NEC 3Xp $469 (portable)
#944—AT-250ms/DTR-450k/sec

NEC 3Xe $597 (external)
#945 —AT-200ms/DTR-450k/sec

***FREE Express Shipping!**
Free Express (2-day) Shipping only on products in this ad marked with a star: *

3 FREE CDs



FREE Lunicus, Mister X & the EDUCORP CD Sampler with a CD-ROM drive or drive bundle purchase from EDUCORP.
May not be valid when price matching. You get:



Lunicus
$$$$1/2 "The King of CD-ROM Adventure.." *MacUser* (MSRP $69.95)



Mister X
An animation-enhanced volume of the Mister X comic book series. (MSRP $19.95)



EDUCORP CD Sampler
Over 100 demos of the newest and best-selling titles. (MSRP $9.95)

CD Bundles

Education Bundle

Includes drive, Labtec speakers with A/C adapter, stereo headphones, choice of SCSI cable, driver software and power supply.

1. Grolier's Encyclopedia ...*Retail* $395.00
2. World Atlas 69.95
3. U.S. Atlas 69.95
4. The Big Green Disc 69.00
5. Think for Yourself 249.00
6. The View from Earth 79.95
7. Dictionary/Living World 3.0 ..... 149.00
8. Mayo Clinic Family Health Bk 69.95
9. Shakespeare 29.99
10. Sherlock Holmes 29.99
11. Audubon's Birds of America 49.99
12. Audubon's Mammals 49.99

A5028 Plextor DM5028 .$649
A5100 CD Tech-4100A 569
A1824 CD Tech-T3401.....699
1 FREE multimedia title with CD Tech.
A945 NEC 3Xe 829
A944 NEC 3Xp 679

Optional Bundles

You must purchase a drive or drive bundle from EDUCORP.

Super Saver Bundle



■ **5 CDs $59.95 #SB8**
Save $299.80 (Total retail value $395.75)
1. Desert Storm 79.95
2. The Orchestra 69.95
3. Funny: The movie in QuickTime .69.95
4. Sports Illustrated Sports Almanac. 69.95
5. Word Tales 69.95

Reference Bundle

■ **3 CDs $79.95 #SB1**
Save $454.95 (Total retail value $534.90)
1. Grolier's MM Encyclopedia 395.00
2. World Atlas 69.95
3. Mayo Clinic Family Health Bk 69.95

Combine bundles for extra savings!

Save A Bundle!

■ **3 CDs for $39.95**
Choose from 8 CDs including:
B4. Desert Storm $39.99
B40. Goferwinkel's Adventure 29.95
B49. Animal Alphabet 69.00

■ **3 CDs for $49.95**
Choose from 15 CDs including:
B1. World Atlas 69.95
B25. Funny 39.99
B26. The Orchestra** 79.98

■ **3 CDs for $69.95**
Choose from 18 CDs including:
B41. Space Shuttle 49.95
B43. Encyclopedia of Life 129.95
B60. The Journeyman Project 79.95
B53. Oceans Below 49.95

■ **3 CDs for $124.95**
Get these 3 CDs:
B51. Classic Collection Plus 99.99
B11. Think for Yourself 249.00
B2. Grolier's MM Encyclopedia ..395.00

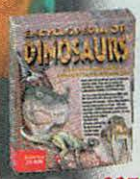
Call for a complete list.
**Excluded from the 90-day offer.

Over 600 CD's In Stock

Educational Multimedia



1280 Encyclopedia of Life* $64.95
An exciting multimedia reference to life on our planet! A quarter million words, QuickTime videos and award-winning color photos.



50110 Encyclopedia of Dinosaurs* 49.95
"...a tour de force of the prehistoric world. It's potential is wonderful, the ease of use is excellent, and above all, it's fun to use!" *Sweetwater Union H.S.* Hundreds of illustrations, animated diagrams and video.

2078 Animal Alphabet ..29.95
ALPHABET
Select an animation, or QuickTime video. One for each letter or narrated sentence.

ZooGuides Series

"...a series of beautiful interactive zoo discs."
MacUser Magazine
Each ZooGuide is filled with interactive video, photos, narration, animation, distribution maps and a guide to families and species.



2081 Butterflies/World $39.95
Zooguide v.1. Explore 15 families.
1210 Whales & Dolphins 39.95
Zooguide v.2. MacUser Top 50.
1275 Mammals of Africa 39.95
Zooguide v.3. Take an African safari!
50300 The Rainforest 39.95
Zooguide v.4.

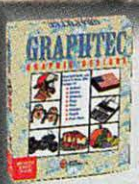
Entertaining Multimedia

50319 Freak Show.....$48.95
2094 Comic Bk Confidential 34.95
2095 A Hard Day's Night 27.95
Rated $$$$$ *MacUser Magazine*



50318 Short Attention Span Theater: It's All Relative $39.95

Desktop Publishing



1680 Graphtec Graphic Designs 2.0* $49.95
Over 800 color & b/w professional EPS images you can edit: animals, borders, business, flags, holiday, people and more.

1274 Trick of Light.....79.95
150 high quality photographic royalty-free backgrounds for print, video & multimedia.

50073 Design Toolkit Pro* $79.95
Over 3800 color & b/w EPS design elements for desktop publishing, multimedia, and presentations; textures, patterns, tiles, fonts, creative caps, borders, backgrounds and more!



50141 Font Frontier* ...39.95
A collection of 117 high quality Type 1 and TrueType fonts.

50277 GraphicIMPACT!* 99.95
Over 695 color & b/w EPS elements.

Stock Photography

Photo CD

The titles below have at least 100 royalty-free photographs and are in Kodak Photo CD format.






1444 Pro Photo Collection* $54.95
50150 Essential Bckgrnds* ...49.95
1297 Creative Back/Tex. * $79.95
50048 Best of People/Bus.* 79.95

Ad Background created using Best of Nature's Way #50132, $64.95

CD-ROM Showcase

50376 Virtual Galaxy.....$15.95



Tony Quinn's Virtual Galaxy offers an easy to use operator interface, hundreds of digitally created full color illustrations and animated sequences. View 3-D images, virtual landscapes, QuickTime movies and visit the robot planet.

1564 Wayzata World Factbook 15.95



1994 Edition. Journey around the globe! You'll find detailed high quality photos, in-depth information from the State Department, CIA, or travel advisories.

Published by Wayzata

2090 Small Blue Planet...$59.95



• *Brush up on geography while you browse its series of maps showing vital physical and political data.*

Rated ★★★★ 1/2 *MacUser Magazine* This interactive exploration is a global geographic voyage so fun and engaging you'll be surprised how much you learn along the way. The Maps that Move interface is your conduit to our Small Blue Planet. Cruise and zoom over The Real Picture Atlas' spectacular imagery—These are real pictures!

Published by Now What Software?!



All 3 just $79.95

You don't have to buy a CD-ROM drive to get this great price.

Action, Aliens & Astronauts! $79.95

You'll get *Jump Raven* "Edu-tainment with a gun," *Lunicus* "The King of CD-ROM Adventure" and *Space Shuttle* Rated ★★★★ MacUser Top 50. Use code #GB1

1385 Right Images.....$159.95

STARS * PLANETS * ASTRONAUTS * * NEBULAE * SHUTTLES *

"The best and most comprehensive commercial collection..."

Publish Magazine

People naturally react to these dramatic images. Unlimited reproduction rights on over 100 photographs.

Published by Tsunami Press

50225 CD AllCache.....$44.95



High performance CD-ROM drive acceleration software. Make your CD-ROM drive unbelievably fast with CD AllCache. Optimizes drive performance— searches, seeks and opening of files and folders. Manually adjusts cache sizes or click on the button, and the data cache settings will be optimized automatically. Enjoy CD AllCache's Audio DA and listen to your favorite music while you work. Corporate and site licenses available.

Published by CharisMac Engineering

50420 Cooking to Seduce $27.95



Enjoy a brand new multimedia experience in cooking and entertaining. Eight evening themes to choose from with tantalizing menus & complete recipes. Print menus, recipes & shopping lists. Before dinner, set the mood by selecting any of the 8 video clips and 40 voice comments on decor, music, movie & gift ideas and listening to a musical background distinctive to each theme.

Published by Procomad Inc.

"This is a landmark product that should be in the Smithsonian Institute."

Glenn J. Collyer
San Francisco State University

MIDNIGHT STRANGER*

The first CD-ROM to employ *Virtual Intimacy*

#50316, $59.95

Published by Gazelle Technologies



A Night Out In A Gritty Urban Environment

FREE Stereo Headphones!

- Meet the stranger of your dreams
- Interact with 18 different characters
- Roam freely between 23 different locations
- Adult themes
- You control the plot through first person interaction
- Over 12 hours of play time
- Romantic adventures
- 100's of variations

Midnight Stranger is an interactive urban experience that features over 60 minutes of digital video, full color photographic environments, original music soundtracks and virtually endless interactivity.

18+ ADULTS ONLY
MATERIAL IS NOT SUITABLE FOR CHILDREN-MUST BE 18



Free Catalog!

If you don't see the CD-ROM title you want, chances are, we have it! Call for your free color catalog. (Foreign customers send $4 postage & handling)

Kodak Photo CD is a trademark used under license.

The Multimedia Pioneer™

Prices subject to change without notice. Dealer Inquiries Welcome.

EDUCORP 1-800-843-9497

W27

Order toll-free in U.S. & Canada.

7434 Trade Street • San Diego, CA 92121 • Info 619-536-9999 • FAX 619-536-2345

Circle 157 on reader service card



WISE GUY

BY GUY KAWASAKI

Potholes along the Information Superhighway

If this is the highway, I'd rather hitchhike along a country road

FOR ONCE, THE REPUBLICANS have done the right thing. For a few months, because of the Whitewater controversy, we do not have to listen to Bill Clinton and Al Gore talk about the information superhighway. Say what you like about Bob Dole, he does know how to defocus national attention. While Whitewater occupies center stage, I would like to point out several potholes in the information superhighway.

Building What You Want to Use

Pothole #1: The wrong kind of people are trying to build the highway. The inventions that changed the world—such as the telephone, computer, and airplane—were created in the garages and labs of nerdy scientists and engineers, not in investment banks or boardrooms.

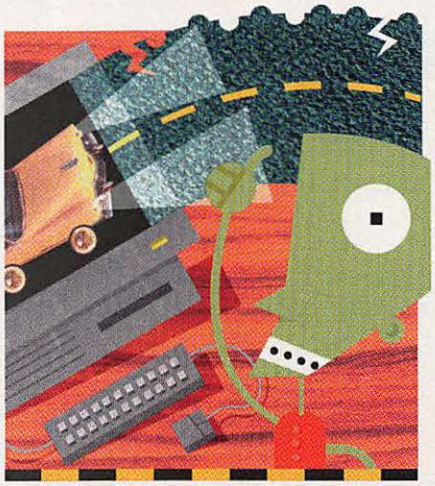
Making history and going where no one has gone before were the motivations—not fattening corporate coffers or stroking the (mostly male) egos of businesspeople. I once asked Steve Wozniak, the cofounder of Apple, what motivated him to design the Apple I and Apple II. His response: "I tried to build the computer that I wanted to use." If Apple had begun Macintosh development by merging with Xerox PARC, Microsoft wouldn't have had anything to copy when MS-DOS ran out of gas.

Pothole #2: Even if the business types were to succeed, do you really want them to? It's debatable whether there's enough good programming for today's 30 or so channels of video—much less for 500. Also, part of the beauty of 30 or so channels is that 30 is a surfable number. You can, through serendipity, find something that looks interesting.

How will we do this with 500 channels? It will be like trying to find something in 500 files on the desktop by opening them one at a time. Keyword searches won't work because you'd have to determine in advance the subjects that interest you. How many times have you flipped channels and stopped to watch something you didn't know you'd be interested in?

Shop until You Drop

Pothole #3: Who says everybody wants to shop at home? A handful of businessmen have decided how Americans—particularly American women—want to shop. The theory is that many consumers are so harried, busy, and yet bored with their lives that they want to flick on the shopping channel and watch Dianne Von Furstenberg show us the latest in gold-plated synthetic garnet earrings.



These businessmen don't get it, so as a stay-at-home Macintosh househusband, allow me to explain: Shopping is fun. It's sport. It's entertainment. People want to get dressed up, jump in a car, go to the mall, push strollers around, eat fast food and ice cream, and shop until they or their baby drops. They want to get out of the house and see other people—not be glued to the lobotomy box watching infomercials.

Big, Cheap, and Slow

Pothole #4: Books won't die. Part of the information superhighway vision is that books will die, and on-demand video or multimedia CD-ROMs will replace them. Books will never die because they have certain advantages: you can drop them; you can read them in low light; and you don't need to recharge their batteries or plug them in. Books also have a tactility and heft that a disc, cable, or satellite will not equal.

I've yet to see a CD-ROM worth buying—I don't even have my CD-ROM drive hooked up most of the time, because I need the electrical outlet for important things like a lava lamp. I'll concede that there are some cool educational CD-ROMs for children, and that CD-ROMs are acceptable for holding large quantities of information like collections of quotations for me to steal from. But in most cases CD-ROMs are nothing more than big, cheap, and slow mass-storage discs.

Also, the information superhighway vision of the dissemination of information is inherently elitist. Let us rue the day that people are forced to rely solely on TVs or computers to get information. And let us not be stupid enough to think that private enterprise will provide televisions or computers to everyone at the request of the government.

No Shoes

Pothole #5: Long after the mergers, alliances, and acquisitions (and the failures of said mergers, alliances, and acquisitions) are announced, it still comes down to implementation. Here's a little factoid for you: many parts of Washington, D.C., don't have cable television, circa 1994, because the various government agencies can't decide who should get the franchise. Pardon me? The billmaker's children have no shoes? m

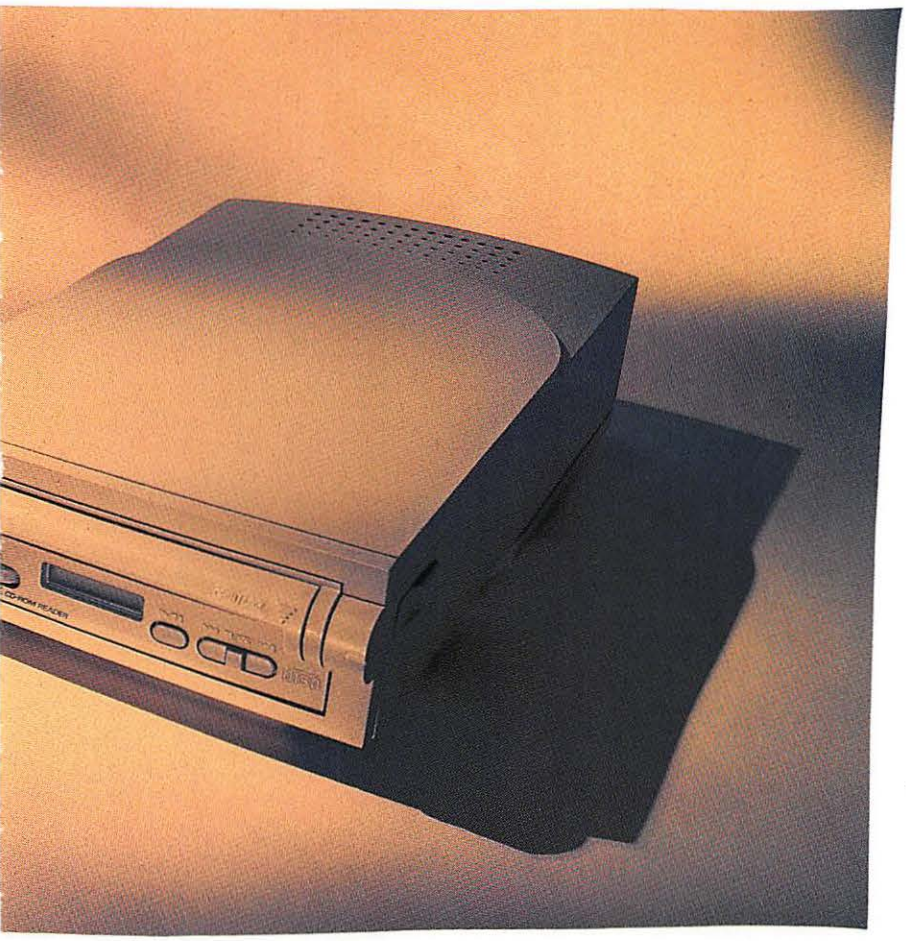
GUY KAWASAKI's views are his own and only sporadically represent those of *Macworld*. His lastest book is *Hindsights* (Beyond Words Publishing, 1994). He has investments in Bit Jugglers, Global Village Communication, Bookmaker Corporation, and others. He can be reached at Kawasaki@radiomail.net.

GORDON STUDER


Don't lie to me.

how much is it going to cost me; and, will it look good on my desk? The answers are: Yes; around the same that it will cost you for a 2X; and you'd better believe it.

Our new MultiSpin CD-ROM readers are not only fast but interactive and intuitive to your needs, with control and display features on the front panel that tell you exactly what's going on (or not going on) at all times. They also have stand-alone audio controls so you can play music CDs without a computer. And there's a complete line of NEC interfaces, which include easy-to-use installation software. So you won't spend half your life trying to hook your reader up.



They're compatible with Macs and PCs, as well as Kodak Multisession Photo CDs. And they come with the longest commitment in the industry – a 2-year limited warranty.

For more information on our new MultiSpin 3X CD-ROM readers, call 1-800-NEC-INFO now. Or, for immediate details via fax, call NEC FastFacts™ at 1-800-366-0476, request document #23768.

We'll answer any questions you may still have about CD-ROM. And (this is the best part) you'll actually get to have an honest conversation for a change.

NEC

Circle 16 on reader service card

You want the truth? Here it is. NEC's new MultiSpin® 3X CD-ROM readers are the best-performing readers on the market.

Notice, there is no asterisk to qualify that statement. No special connections are required to make our readers run at triple speed. And, you don't have to have an NEC computer or monitor. (Although it would be nice if you did.)

We were the first to introduce double speed. And now we improved our data transfer rate to 450 Kbytes/sec. and made a triple-speed reader. (Because that's what you wanted.) We also cut our access time to less than 200 milliseconds, added a 256-Kbyte continuous-flow cache, a SCSI 2 interface, and a full 16-bit SCSI card.



NEC MultiSpin 3Xp and 3Xe

OK, so now we've done what every true computer ad must do. We've filled your head with a long list of numbers and specs. But, what does it all mean?

Well, it means you can get your information three times faster than you can with standard readers, see smoother animation and video.

And then there are the really important questions. Like is our CD-ROM reader easy to use;

MultiSpin is a registered trademark and FastFacts is a trademark of NEC Technologies, Inc. NEC GSA#GS00K91AGS5241 © 1993 NEC Technologies, Inc.

← OK. It's fine print, but it's just trademark stuff. Honest.

The first trackball in awards is first in something even more important.

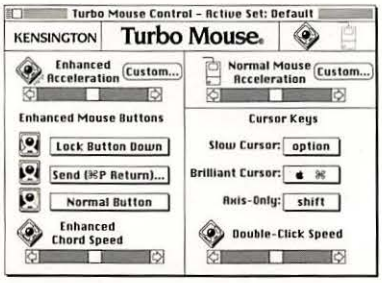
Comfort.

MacUser gave it the coveted Five Mice. The readers of *Macworld* voted it "Best Input Device" five times. It has won more awards than any Macintosh input device in history.

What makes Turbo Mouse the number one choice in input devices?

Move the ball. Click the buttons. Feel the difference.

Turbo Mouse is more comfortable than an ordinary mouse. Its superior trackball design



means less hand and arm movement: you move only the ball, not the entire device.

And it's more comfortable than an ordinary trackball. A unique combination of hardware and software make the difference.

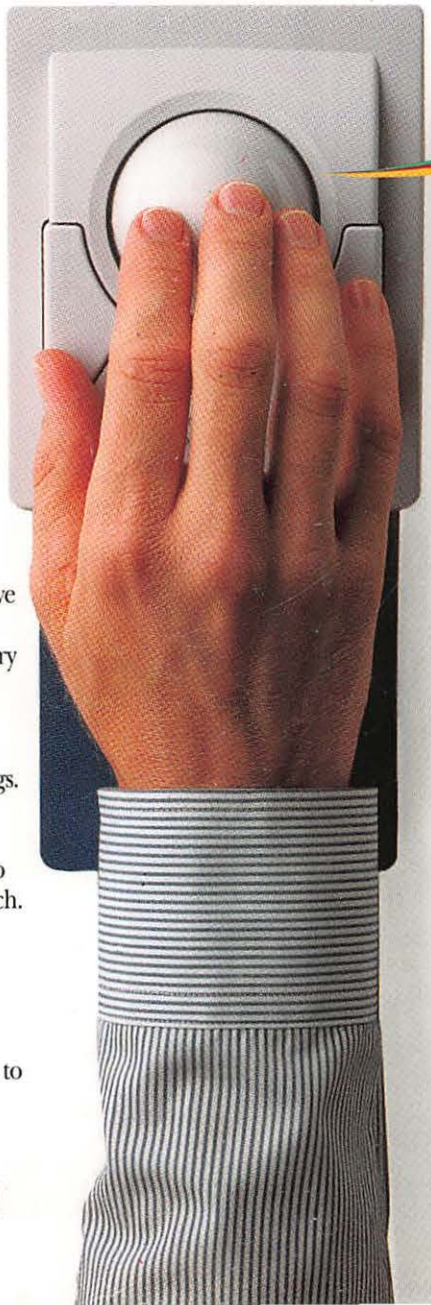
Turbo Mouse has a large comfortable ball that rests on high-quality stainless steel bearings. The movement is ultrasmooth. Precise.

The buttons are also more comfortable. They are oversized, well-positioned and easy to click. Your fingers don't have to stretch as much. There is less fatigue after a day's work.

Program the buttons. Jump to HotSpots. Save unnecessary movements.

The other part of the comfort story is our unique, programmable software. It allows you to automate the functions you use most often.





Program one button as a double-click to open files and programs instantly.

Program another button to avoid holding down the button when dragging objects. Or program a button to slow the cursor down, lock on an axis or send keyboard macros. And our new Brilliant Cursor® technology even allows you to jump to predefined HotSpots onscreen, like the icons in a toolbar or palette.



And Turbo Mouse automatically remembers which application you're in. So you can program different command combinations for each application.

It all adds up to less repetitive motion. Less wasted energy. Less stress.

Kensington Satisfaction Guarantee

Turbo Mouse 4.0 comes with on screen help, two ADB ports for chaining and is fully System 7 compatible. Our unique Satisfaction Guarantee includes a 5-year warranty, toll-free technical support, and a no risk 60-day trial. For information, call 800-535-4242. Outside the US, 415-572-2700. For information by fax, call and enter 82 and request document #323.

Turbo Mouse® 4.0

KENSINGTON®

Brilliant Cursor, Turbo Mouse and Kensington are registered trademarks of Kensington Microware Limited. © 1993 Kensington Microware Limited 12/93